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## Review of the southern South American Macrodactylini (Coleoptera: Scarabaeidae: Melolonthinae) with descriptions of new genera and species

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## Abstract

The tribe Macrodactylini (Coleoptera: Scarabaeidae: Melolonthinae) is reviewed from southern South America. A total of 13 genera and 33 species were found in the study area consisting of Argentina from Neuquén south and Chile from IV Región de Coquimbo south. The following three **new genera** are described: *Extenuoptyophis*, *Insimuloissacaris*, and *Neuquenodactylus*. The following 11 **new species** are described: *Ampliodactylus elguetai*, *Ampliodactylus guinezi*, *Ampliodactylus inusitus*, *Ampliodactylus panguipullensis*, *Extenuoptyophis horridulus*, *Extenuoptyophis metropolitensis*, *Insimuloissacaris nahuelbutensis*, *Issacaris falsa*, *Issacaris sola*, *Neuquenodactylus ramus*, and *Phytholaema fenestra*. The species *Schizochelus modestus* Philippi, 1861 is transferred to the genus *Ampliodactylus*. Lectotypes are designated for the following five species-group names (species names given in their original combination): *Dicrania aeneobrunnea* Philippi, 1861, *Modialis prasinella* Fairmaire & Germain, 1860, *Phytholaema elaphocera* Redtenbacher, 1868, *Phytholaema herrmanni* Germain, 1901, and *Schizochelus modestus* Philippi, 1861. Neotypes are designated for the following four species-group names (species names given in their original combination): *Acanthosternum splendens* Philippi, 1861, *Areoda mutabilis* Solier, 1851, *Issacaris petalophora* Fairmaire, 1889, and *Phytholaema flavipes* Philippi, 1861. The genera *Modialis* Fairmaire & Germain, 1860 and *Phytholaema* Blanchard, 1851 are here transferred to the tribe Macrodactylini. The species-group names *Phytholaema pallida* Saylor, 1937 and *Phytholaema peccans* Blackwelder, 1944 are placed in synonymy with *Phytholaema herrmanni* Germain, 1901. Descriptions or diagnoses, keys, and distributional data are given for all species.

**Key words:** Chile, Argentina, *Ampliodactylus*, *Issacaris*, *Macrodactylus*, *Modialis*, *Phytholaema*, *Plectris*, *Pristerophora*, *Pseudodicrania*, *Ptyophis*, *Pusiodactylus*.

## Introduction

The tribe Macrodactylini is a very diverse group with 47 genera and 1025 species and subspecies occurring in the New World. Most of what is known about the species in this tribe was published over a half century ago in the form of species descriptions with limited and often inadequate information. A recent generic-level review by Katovich (2008) coupled with cataloging efforts by Evans (2003) and Evans & Smith (2009) have helped to make generic-level identifications and the names and general distributions more accessible. There have also been a few efforts to review some genera regionally, especially from Mexico, Central America, and southern South America (e.g., Smith 2008; Fuhrmann 2012). However, nearly all genera are badly in need of taxonomic revisions and the identities of most species are verified only by studying the types. It is also clear that there are numerous new species already in institutional collections awaiting description.

It is well documented that southern South America has a distinct flora and fauna with high rates of endemism and forms a discrete biological region. We use the definition of Morrone (1996, 2001) for southern South America, comprised of the Central Chilean, Patagonian, and Subantarctic biogeographical provinces of Argentina and Chile. This corresponds with Regions IV–XII in Chile and the Argentinean provinces of Mendoza (but only in the Andean section), Neuquén, Río Negro, Chubut, Santa Cruz, and Tierra del Fuego. This paper is a continuation of our efforts to survey and inventory the Scarabaeoidea of southern South America (e.g., Smith & Skelley 2007; Mondaca & Smith 2008) by providing a taxonomic review and identification guide to all species of Macrodactylini occurring in this region.

The tribal classification of the genera *Modialis* Fairmaire & Germain, 1860 and *Phytholaema* Blanchard, 1851 have only been discussed peripherally in the literature, and they have been placed in various tribes without any detailed character analysis. Arrow (1903) placed *Modialis* and *Phytholaema* in the tribe Heteronychini and von Dalla Torre (1912), Blackwelder (1944), and Gutiérrez (1944) placed them both in Liparetrini. Evans (2003) placed *Modialis* in Melolonthini and *Phytholaema* in “incertae sedis” without explanation but in partial recognition that Liparetrini is an Australian tribe and that the New World genera in this tribe needed to be placed elsewhere. Liparetrini is now considered to be endemic to Australia and all New World taxa formerly placed in the tribe are now classified in other tribes. Katovich (2008) reviewed all of the Macrodactylini genera but only mentioned *Modialis* incidentally. The placement of *Modialis* and *Phytholaema* within Macrodactylini here was done through the process of elimination of the other Melolonthinae tribes and with character support. A more detailed phylogenetic analysis is necessary to confirm this classification.

All of the genera treated in this paper are placed in the Macrodactylini based on the following characters: labrum not visible in dorsal view of head and located below the clypeus, propygidium and fifth tergite at least

partially delimited by a suture, pygidium large and triangular, abdominal ventrite 5 longer than each of the preceding ventrites, metatibial spurs (when present) both located below the tarsal articulation (not on either side or with one adjacent), metatibia spurs absent in males but not females (except *Plectris* and *Ptyophis*), tarsal claws paired and symmetrical. All of the genera (including the new genera) are defined based on the same suites of morphological characters used by Katovich (2008) in his generic-level review of the tribe.

## Materials and methods

### Specimens

The following institution and private collections listed below (curators in brackets) are cited in the text as depositories for specimens examined during the course of this review.

BMNH	The Natural History Museum, London, United Kingdom (Max Barclay, Malcolm Kerley)
BGLC	Basilio Guiñez L. Collection, Temuco, Chile
CASC	California Academy of Sciences, San Francisco, California, United States of America (Jere Schweikert, Norman Penny)
CDFA	California Department of Food and Agriculture, Sacramento, California, United States of America (Chuck Bellamy)
CMNC	Canadian Museum of Nature, Ottawa, Ontario, Canada (François Génier, Robert Anderson)
FMNH	Field Museum of Natural History, Chicago, Illinois, United States of America (Alfred Newton, Margaret Thayer)
FRFC	Francisco Ramírez F. Collection, Santiago, Chile
FSCA	Florida State Collection of Arthropods, Gainesville, Florida, United States of America (Paul Skelley)
JMEC	José Mondaca E. Collection, Peñaflor, Chile
LEMQ	Lyman Entomological Museum, McGill University, Ste. Anne de Bellevue, Québec, Canada (Terry Wheeler, Stéphanie Boucher)
MNHN	Muséum National d'Histoire Naturelle, Paris, France (Olivier Montreuil)
MNNC	Museo Nacional de Historia Natural, Santiago, Chile (Mario Elgueta)
NMPC	National Museum of Natural History, Prague, Czech Republic (Jiří Hájek)
NHMW	Naturhistorisches Museum Wien, Vienna, Austria (Heinrich Schönmann)
SAGC	Unidad de Entomología, Laboratorios y Estación Cuarentenaria Agrícola, Servicio Agrícola y Ganadero, Santiago, Chile (Sergio Rothmann)
SEMC	Snow Entomological Museum, University of Kansas, Lawrence, Kansas, United States of America (Zack Falin)
SRTC	Sergio Rothmann T. Collection, Santiago, Chile
UCCC	Museo de Zoología, Universidad de Concepción, Concepción, Chile (Jorge Artigas)
UMCE	Universidad Metropolitana de Ciencias de la Educación, Santiago, Chile (Jaime Solervicens)
USNM	United States National Museum of Natural History, Washington, District of Columbia, United States of America (David Furth)

### Designation of lectotypes and neotypes

Lectotypes were designated for the following names: *Dicrania aeneobrunnea* Philippi, 1861 (now *Pseudodicrania aeneobrunnea*), *Modialis prasinella* Fairmaire & Germain, 1860, *Phytholaema elaphocera* Redtenbacher, 1868 (now a junior synonym of *Phytholaema dilutipes* (Fairmaire & Germain, 1860)), *Phytholaema herrmanni* Germain, 1901, and *Schizochelus modestus* Philippi, 1861 (now *Ampliodactylus modestus*). Lectotypes were designated for these species-group names in order to preserve the stability of nomenclature by selecting one specimen as the sole, name-bearing type of the taxon. In many older descriptions, it is unclear how many specimens comprised the type series and there is a possibility that more than one species may be represented. Unless a lectotype is selected, there can be lingering taxonomic uncertainty.

The rules of zoological nomenclature require that a designation of a neotype “is validly designated when there is an exceptional need and only when that need is stated expressly” (International Commission on Zoological

Nomenclature 1999; Article 75.3). Four neotypes are designated in this work for *Acanthosternum splendens* Philippi, 1861 (now a junior synonym of *Modialis prasinella* Fairmaire & Germain, 1860), *Areoda mutabilis* Solier, 1851 (now *Phytholaema mutabilis*), *Issacaris petalophora* Fairmaire, 1889, and *Phytholaema flavipes* Philippi, 1861 (now a junior synonym of *Phytholaema dilutipes* (Fairmaire & Germain, 1860)). These neotypes are designated in order to preserve the stability of nomenclature by selecting one specimen as the sole, name-bearing type of the taxon when the original name-bearing type specimen(s) was lost or destroyed. The neotype specimen serves to associate the published name with an actual specimen and as a reference standard for the taxon. Other qualifying conditions for designating valid neotypes in section 75.3 of the code are satisfied under the species treatments for these names. We consider that a neotype is necessary in this case due to the history of taxonomic confusion of species and names in this genus. Until revisionary work is done on long-neglected groups such as Macrodactylini, the taxonomy and classification are “complex zoological problems” and there is doubt surrounding the identities of all species and names.

#### *Label data, specimen database, and maps*

The verbatim label data is given for type specimens in quotation marks with slashes to indicate a new line of text on the label. All specimens are in the Scarabs of Southern South America database with appropriate labels stating their unique database number either in the “AS26xxxx” or “SSSA300xxxx” format. Database labels for specimens with the “SSSA-” prefix also have a data matrix barcode on the label.

All specimens studied were recorded in a specimen-level database using the Mantis database program created by Piotr Naskrecki (available from: <http://140.247.119.225/Mantis/index.htm>). The maps were created by exporting locality coordinates from Mantis and uploading them to the SimpleMappr website (<http://www.simplemappr.net/>).

#### *DNA barcoding*

A DNA barcoding analysis was performed using the barcode region of cytochrome c oxidase 1 (CO1) mitochondrial DNA to support the recognition of a new species in the genus *Phytholaema*. Fresh specimens were collected into 95% ethanol and stored at -80 °C at the CMNC. A leg was removed and sent to the Biodiversity Institute of Ontario (University of Guelph, Guelph, Ontario, Canada) for the sequencing of the CO1 barcode region. Data for these specimens is publicly available from the Barcode of Life Data System (BOLD: <http://www.boldsystems.org>) using the Process ID numbers from Fig. 106. Ratnasingham & Hebert (2007) detail the BOLD datasytem and analyses for CO1 barcoding.

### **Key to the Macrodactylini genera from southern South America**

The sex of specimens from most genera (except *Plectris* and *Ptyophis*) is easy to determine by looking for metatibial spurs. Males never have metatibial spurs and females always have two metatibial spurs, except for *Pusiodactylus flavipennis* with only one metatibial spur in females. *Plectris* and *Ptyophis* males and females both have two metatibia spurs, but the antennal clubs are sexually dimorphic (elongate in males, short in females).

1. Mesosternal peg prominent, projecting forward to procoxae (Fig. 87). Color shiny green to yellowish green (Figs. 81–82, 84). Length usually greater than 20 mm. .... *Modialis* Fairmaire & Germain
- Mesosternal peg absent or reduced to nub (e.g., Fig. 133). Color variable but not shiny green. Length generally less than 20 mm (but not always) .... 2
2. Antennae with eight antennomeres; male antennal club with four antennomeres (e.g., Fig. 98); female antennal club with three full antennomeres and adjacent antennomere with partial lateral projection or nub alongside club .... *Phytholaema* Blanchard
- Antennae with nine antennomeres; male and female club with three antennomeres with some exceptions (*Ptyophis* males and females sometime have a 4 or 5 antennomere club but always have a total of nine antennomeres) .... 3
3. Total length greater than 15 mm .... 4
- Total length less than 13 mm .... 7
4. Mesosternal peg evident between mesocoxae (reduced but at least a nub visible) (e.g., Figs. 47, 133) .... 5
- Mesosternal peg absent .... *Issacaris* Fairmaire
5. Elytra distinctly bicolored, yellowish brown with complete black border (Figs. 88–89). .... *Neuquenodactylus* Smith & Mondaca, new genus
- Elytra brown without black border .... 6

6.	Pronotum and head metallic green or brown with green reflections (Fig. 133) . . . . .	<i>Pseudodicrania</i> Gutiérrez
-	Pronotum and head brown, without green reflections (Fig. 49) . . . . .	<i>Insimuloissacaris</i> Smith & Mondaca, new genus
7.	Protibia along outside edge smooth with 1–3 large teeth in apical half (e.g., Fig. 18); protibial spur absent . . . . .	8
-	Protibia along outside edge saw-toothed with 2 larger teeth near apex (e.g., Fig. 38); protibial spur present or absent . . . . .	11
8.	Protibia with 3 distinct teeth; third tooth reduced, medial . . . . .	<i>Plectris</i> LePeletier & Serville
-	Protibia with 1–2 distinct teeth near apex . . . . .	9
9.	Pygidium wider than long, convex; sexual dimorphism not extreme: males and females with similar setal patterns, not covered with scale-like setae . . . . .	10
-	Pygidium distinctly longer than wide, greatly convex; sexual dimorphism extreme: males covered with scale-like setae, abdomen flattened ventrally; females covered with fine setae, abdomen bulbous ventrally. . . . .	<i>Macrodactylus</i> Dejean
10.	Dorsal surface bicolored with dark areas on pronotum and dark areas or spots on apex and base of elytra (sometimes these dark areas are expanded and can cover almost the entire elytra); dorsal surface without obvious setal patterns, setae not prominent and evenly distributed (Figs. 140–143) . . . . .	<i>Pusiodactylus</i> Smith
-	Dorsal surface not bicolored (or weakly bicolored); dorsal surface with obvious setal patterns, setae prominent and/or not evenly distributed (Figs. 1, 5, 10, 15, 20, 25, 30) . . . . .	<i>Ampliodactylus</i> Smith
11.	Total length greater than 10 mm. Males with two metatibial spurs; male antennal club often consisting of more than 3 antennomeres, length greater than funicle and scape (Fig. 139) . . . . .	<i>Ptyophis</i> Redtenbacher
-	Total length less than 10 mm. Males without metatibial spurs; male antennal club always consisting of 3 antennomeres, length equal to or less than funicle and scape (e.g., Fig. 38) . . . . .	12
12.	Clypeus parabolic, sometimes weakly sinuate, apex strongly reflexed. Pronotum without long, erect setae or with sparse long, erect setae (Figs. 38, 43) . . . . .	<i>Extenuoptyophis</i> Smith & Mondaca, new genus
-	Clypeus sinuate (bilobed) to broadly rounded, apex slightly reflexed. Pronotum with numerous long, erect setae especially apically (Figs. 122, 124, 126) . . . . .	<i>Pristerophora</i> Harold

## Genus *Ampliodactylus* Smith, 2008

*Ampliodactylus* Smith, 2008: 9. Type species: *Macrodactylus marmoratus* Curtis, 1844 by original designation.

**Diagnosis.** Length 5.0–10.5 mm. Dorsal surface unicolored, often with uneven setal pattern. *Head*: clypeus parabolic. Mentum much longer than wide, with distinct longitudinal trough. Antennae with 9 antennomeres. *Pronotum*: widest medially, width greater than length. *Legs*: protibia with two apical teeth on outer margin, without series of small teeth medially and basally. Claws symmetrical, each side split subapically. Protibial spurs absent. Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres with form simple, not split or with strong sinuations.

**Composition.** The seven species in this genus are all endemic to southern South America.

**Remarks.** This genus was reviewed by Smith (2008).

## Key to species of *Ampliodactylus*

1.	Dorsal color shiny black, contrasting with light-colored femora and tibiae (Figs. 5–6) . . . . .	<i>Ampliodactylus guinezi</i> Smith & Mondaca, new species
-	Elytra brown with even distribution of white setae, pronotum brown and/or tan in color . . . . .	2
2.	Elytra brown mottled with white setae, pronotum with black (medial) and brown (lateral) coloration (Figs. 18, 33). Length usually greater than 7 mm . . . . .	3
-	Elytra brown with even distribution of white setae, pronotum brown and/or tan in color (sometimes darker medially). Length usually less than 7 mm . . . . .	4
3.	Pronotum with distinct medial row of thick, white setae; scutellum obscured by thick, white setae (Figs. 15–16). Total length less than 9 mm . . . . .	<i>Ampliodactylus marmoratus</i> (Curtis)
-	Pronotum without distinct medial row of setae (setae evenly distributed across pronotum); scutellum not obscured by thick setae (Figs. 30–31). Total length greater than 9 mm . . . . .	<i>Ampliodactylus vestitus</i> (Philippi)
4.	Surface of clypeus and frons with similar coating of thick, white setae (Fig. 1). Pronotum usually with medial, longitudinal stripe of setae . . . . .	<i>Ampliodactylus elguetai</i> Smith & Mondaca, new species
-	Surface of clypeus with fine setae contrasting with thicker white setae on frons (e.g., Fig. 21). Pronotum without a distinct medial, longitudinal stripe of setae . . . . .	5
5.	Clypeus truncate medially, rounded laterally . . . . .	<i>Ampliodactylus modestus</i> (Philippi)
-	Clypeus evenly rounded . . . . .	6
6.	Metasternum flat medially. Male with pygidium weakly convex . . . . .	<i>Ampliodactylus inusitus</i> Smith & Mondaca, new species
-	Metasternum with broad medial trough. Male with pygidium bulbous (Fig. 27) . . . . .	<i>Ampliodactylus panguipullensis</i> Smith & Mondaca, new species



**FIGURES 1–4.** *Ampliodactylus elguetai* male holotype. 1, dorsal habitus; 2, oblique habitus; 3, head and pronotum; 4, parameres.

***Ampliodactylus elguetai* Smith & Mondaca, new species**

Figs. 1–4, 144.

**Type locality.** Chile: VIII Región del Biobío: Ñuble: Talquipén.

**Type series.** One male holotype and nine male paratypes. Holotype male (Figs. 1–4) at CMNC labeled a) “Ñuble / Talquipen / 22-X-72 / Coll. G. Moreno” (typeset), b) “H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll.” (typeset), c) “Southern Neotropical Scarabs / database # AS2615668 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008” (typeset), d) “AMPLIODACTYLUS / ELGUETAI / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset). One male paratype at JMEC labeled a) “CHILE ÑUBLE PROV. / Chillán, E. Agronomía / 28-IX-71 / col. G. Monsalve” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001207” (typeset). One male paratype at JMEC labeled a) “CHILE ÑUBLE PROV. / Chillán, E. Agronomía / 28-IX-71 / col. G. Monsalve” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001208” (typeset). One male paratype at JMEC labeled a) “CHILE ÑUBLE PROV. / Chillán, E. Agronomía / 28-IX-71 / col. G. Monsalve” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001209” (typeset). One male paratype at JMEC labeled a) “CHILE

ÑUBLE PROV. / Chillán, E. Agronomía / 28-IX-71 / col. G. Monsalve" (typeset), b) "SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001210" (typeset). One male paratype at FMNH labeled a) "RECINTO / Cord. Nuble / Noviemb 1953 / Leg: Rivera" (typeset), b) "FMNH, 1986 / L. Pena Coll. / Acc. # 17-422" (typeset), c) "Southern Neotropical Scarabs / database # AS2615618 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at CMNC labeled a) "ÑUBLE / TALQUIPEN / 22-X-72 / Coll. G. Moreno" (handwritten in pencil), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset), c) "Southern Neotropical Scarabs / database # AS2615619 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at CMNC labeled a) "Angol-Chile / 2 Noviem 1941 / A. Basour" (typeset and handwritten), b) "Colección / R. Gutiérrez / 1958" (typeset), c) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset), d) "Southern Neotropical Scarabs / database # AS2615616 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at MNNC labeled a) "CHILE ÑUBLE / Fdo. El Rosal / 18-X-1973 / leg. G.Moreno" (typeset), b) "Southern Neotropical Scarabs / database # AS2615620 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at MNNC labeled a) "CHILE ÑUBLE / Fdo. El Rosal / 18-X-1973 / leg. G.Moreno" (typeset), b) "Southern Neotropical Scarabs / database # AS2615621 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008" (typeset). All paratypes listed above also bear a yellow paratype label.

**Description of holotype** (Figs. 1–4). Male. Length 6.0 mm, width 2.5 mm. Dorsal and ventral color dark brown; surface evenly setose. Head, pronotum, and elytra with recumbent, white setae. *Head*: surface densely punctate and evenly setose across clypeus and frons. Clypeus broadly rounded; reflexed with well-defined, upturned border. Eyes prominent but not bulbous. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club approximately equal in length to antennomeres 2–6 combined. Labrum reduced, hidden below clypeus. Maxilla robust, triangular, basal width approximately equal to width of mentum; maxillary palpus with 4 palpomeres, apical palpomere extending beyond clypeus in dorsal view. Mentum approximately twice as long as wide, narrowly triangular with acute apex, surface slightly concave; labial palpus greatly reduced. *Pronotum*: surface moderately to densely punctate and setose, with narrow, weakly-defined longitudinal trough at middle. Pronotum widest medially. Lateral margin appearing smooth but with barely perceptible crenulations; with row of long, erect setae. *Elytra*: surface moderately punctate and setose, with poorly-defined striae. *Venter*: setae with patchier distribution compared to dorsal surface. Metasternum medially flat, setose. Abdomen with penultimate and terminal segments each almost twice the length of the shorter basal segments. Pygidium convex, conical; surface moderately punctate and setose. *Legs*: Tarsomeres 1 and 5 longer, tarsomeres 2, 3, 4 shorter on all tarsi. Claws narrowly separated, symmetrical, each side cleft apically. Protibia with 2 apical teeth on outer margin, remainder of protibial margin smooth. Protibial spur absent. Metatibial spurs absent (presumably 2 present in females). *Genitalia*: parameres thick, separated basally within longitudinal trough (Fig. 4); without sclerotized dorsal aedeagal process.

**Variation.** Length 5.0–7.0 mm. Pronotum often with narrow, well-defined and strongly setose longitudinal trough at middle. Females unknown.

**Etymology.** This species is named in honor of Mario Elgueta (MNNC) as thanks for his support and assistance with the Scarabs of Southern South America project.

**Distribution** (Fig. 144). Chile (8). VIII Región del Biobío (7): Chillán (Escuela de Agronomía), Fundo El Rosal, Recinto, Talquipén. IX Región de la Araucanía (1): Angol.

**Temporal data.** September (2), October (4), November (2).

### *Ampliodactylus guinezi* Smith & Mondaca, new species

Figs. 5–9, 144.

**Type locality.** Chile: IX Región de la Araucanía: Parque Nacional Nahuelbuta, Coimallín.

**Type series.** One male holotype, one female allotype, 11 male paratypes, one female paratype. Holotype male (Figs. 5–9) at MNNC labeled a) "CHILE MALLECO PROV. / P. N. Nahuelbuta / 18-X-2002 / col. B. Guiñez" (typeset), b) "SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001178" (typeset), c) "AMPLIODACTYLUS / GUINEZI / SMITH & MONDACA / HOLOTYPE ♂" (red label, handwritten and typeset). Allotype female at MNNC labeled a) "CHILE MALLECO / P.N. Nahuelbuta / Cruce Pehuenco / 3-XI-

2002 / leg. E. Benavides" (typeset), b) "SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001179" (typeset), c) "AMPLIODACTYLUS / GUINEZI / SMITH & MONDACA / ALLOTYPE ♀" (red label, handwritten and typeset). Two male paratypes at JMEC and one female paratype at CMNC labeled a) "CHILE MALLECO / P.N. Nahuelbuta / Coimallin / 13-XI-2003 / leg. E. Benavides" (typeset) [database numbers SSSA3001180–SSSA3001181, SSSA3001191]. Two male paratypes at CMNC and BGLC labeled a) "P. N. NAHUELBUTA / ARAUCANIA / 8-11-2014 / B. GUIÑEZ" (handwritten) [database numbers SSSA3001182–SSSA3001183]. Two male paratypes at CMNC and BGLC labeled a) "P. N. NAHUELBUTA / ARAUCANIA CHILE / 8-11-2014 / B. GUIÑEZ" (handwritten) [database numbers SSSA3001184–SSSA3001185]. Three male paratypes at CMNC (2) and BGLC (1) labeled a) "PN NAHUELBUTA / Angol, IX R Chile / X-2002 / B. GUIÑEZ L." (typeset and handwritten) [database numbers SSSA3001186–SSSA3001188]. One male paratype at JMEC labeled a) "CHILE MALLECO PROV. / P. N. Nahuelbuta / 18-X-2002 / col. B. Guiñez" (typeset) [database number SSSA3001189]. One male paratype at JMEC labeled a) "CHILE MALLECO / P.N. Nahuelbuta / 24-IX-2003 / leg. E. Benavides" (typeset) [database number SSSA3001190]. All paratypes listed above also bear a yellow paratype label and a database label with the database number and a barcode.



**FIGURES 5–9.** *Ampliodactylus guinezi* male holotype. 5, dorsal habitus; 6, oblique habitus; 7, lateral genitalia; 8, head and pronotum; 9, parameres.

**Description of holotype** (Figs. 5–9). Male. Length 8.0 mm, width 3.5 mm. Dorsal and ventral color dark

black, femora and tibiae tan, tarsi black; surface with uneven setose patches. Pronotum and elytra with patches of thick, recumbent, white setae. *Head*: surface rugopunctate and evenly setose across clypeus and frons. Clypeus broadly rounded; reflexed with well-defined, upturned border. Eyes prominent but not bulbous. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club slightly longer than antennomeres 2–6 combined. Labrum reduced, hidden below clypeus. Maxilla robust, triangular, basal width less than width of mentum; maxillary palpus with 4 palpomeres, apical palpomere slightly extending beyond clypeus in dorsal view. Mentum slightly longer than wide, triangular with acute apex, surface slightly concave; labial palpus greatly reduced. *Pronotum*: surface unevenly punctate with large punctures; with a well-defined, heavily setose longitudinal trough at middle; lateral and apical margins setose. Pronotum widest medially. Lateral margin smooth with row of long, erect setae. *Scutellum*: surface obscured by thick, white setae. *Elytra*: surface rugopunctate, with poorly-defined striae, with patchy setae primarily concentrated along margin. *Venter*: setae long, thin, with more even distribution compared to dorsal surface. Metasternum medially flat, setose. Abdomen with penultimate and terminal segments each almost twice the length of the shorter basal segments. Pygidium convex, conical; surface moderately punctate and setose, microsculptured. *Legs*: Tarsomeres 1–4 similar in length, 5 slightly longer. Claws narrowly separated, symmetrical, each side cleft apically. Protibia with 2 apical teeth on outer margin, remainder of protibial margin smooth. Protibial spur absent. Metatibial spurs absent. *Genitalia*: parameres thick, separated basally within longitudinal trough; without sclerotized dorsal aedeagal process (Figs. 7, 9).

**Variation.** Length 7.0–8.5 mm. Females with antennal club length distinctly shorter than length of antennomeres 2–6 combined (longer than antennomeres 2–6 in males); abdomen moderately inflated (flat in males); with 2 metatibial spurs (both absent in males), spurs on one side of tarsal insertion.

**Etymology.** This species is named in honor of Basilio Guiñez of Temuco, Chile, who collected the holotype and most of the type series.

**Distribution** (Fig. 144). Chile (14). IX Región de la Araucanía (14): Coimallín (Parque Nacional Nahuelbuta), Cruce Pehuenco (Parque Nacional Nahuelbuta), Parque Nacional Nahuelbuta.

**Temporal data.** September (1), October (5), November (8).

#### *Ampliodactylus inusitus* Smith & Mondaca, new species

Figs. 10–14, 144.

**Type locality.** Chile: VII Región del Maule: Cauquenes.

**Type series.** One male holotype. Holotype male (Figs. 10–14) at CMNC labeled a) “CHILE: Maule, / Cauquenes, VII. / 1984, L. Peña” (typeset), b) “Southern Neotropical Scarabs / database # AS2615622 / *Schizochelus modestus* / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008” (typeset) c) “AMPLIODACTYLUS / INUSITUS / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset).

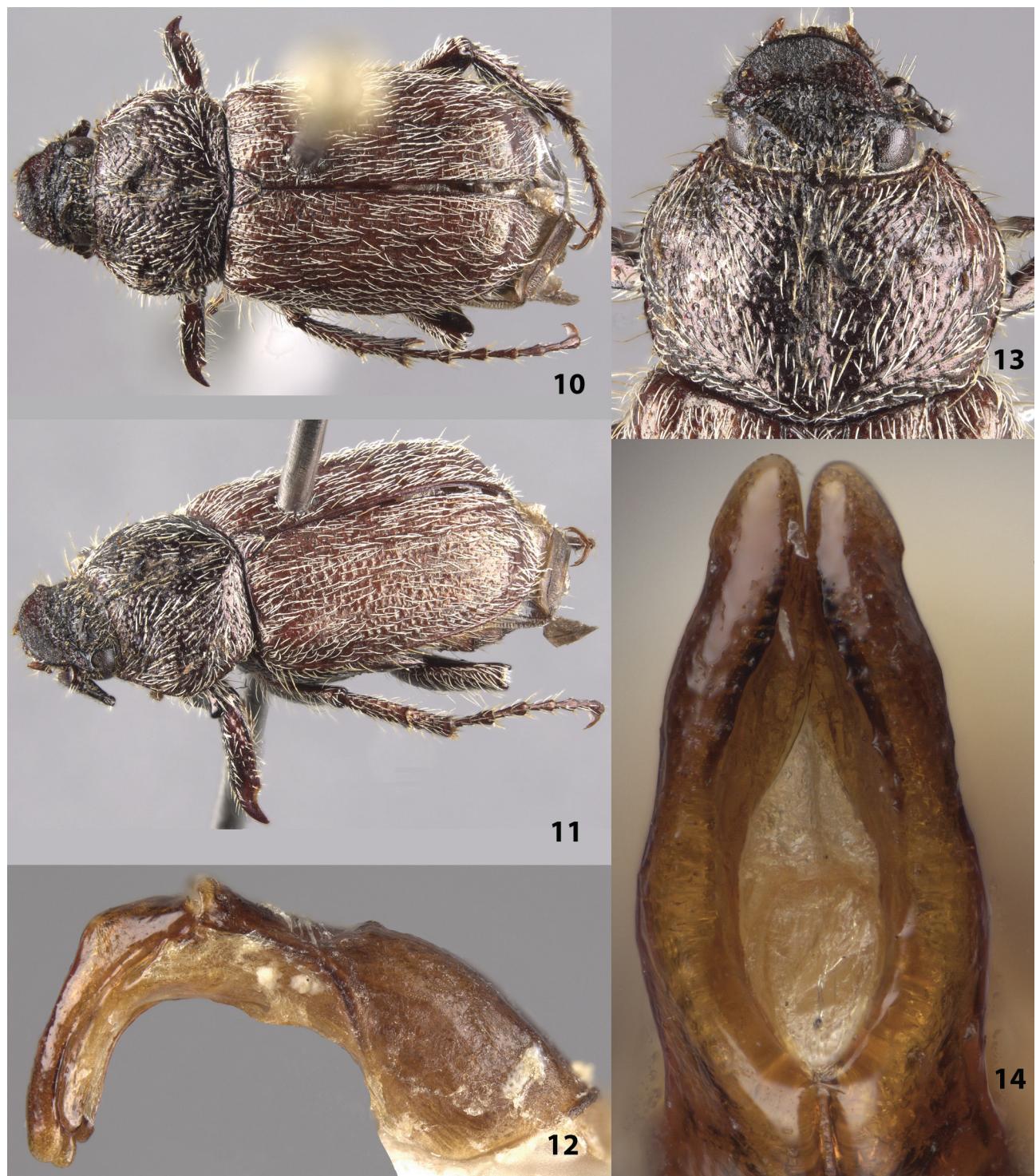
**Description of holotype** (Figs. 10–14). Male. Length 8.0 mm, width 3.5 mm. Dorsal and ventral color dark brown except elytra reddish brown; surface evenly setose. Head with erect setae; pronotum and elytra with recumbent, white setae. *Head*: surface densely rugopunctate and evenly setose across clypeus and frons. Clypeus broadly rounded; reflexed with well-defined, upturned border. Eyes prominent but not bulbous. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club slightly longer than antennomeres 2–6 combined. Labrum reduced, bulbous, projecting below clypeus. Maxilla robust, triangular, basal width less than width of mentum; maxillary palpus with 4 palpomeres, apical palpomere extending beyond clypeus in dorsal view. Mentum bulbous, wide, surface with deep, longitudinal trough; labial palpus greatly reduced. *Pronotum*: surface densely punctate and setose with microsculpturing. Pronotum with well-defined, medial trough; widest medially. Lateral margin with weak crenulations; with row of long, erect setae. *Elytra*: surface moderately punctate and setose, with poorly-defined striae; apex with shiny, less setose patches. *Venter*: metasternum medially flat, setose. Abdomen with all segments similar in length. Pygidium weakly convex; surface moderately punctate and setose. *Legs*: Tarsomeres 1 and 5 longer, tarsomeres 2, 3, 4 shorter on all tarsi. Claws broadly separated, symmetrical, each side cleft apically. Protibia with 2 apical teeth on outer margin, remainder of protibial margin smooth. Protibial spur absent. Metatibial spurs absent (presumably 2 present in females). *Genitalia*: parameres thick, elongate, separated basally with longitudinal trough; without sclerotized dorsal aedeagal process (Figs. 12, 14).

**Etymology.** This species is named for the surprise of finding a single specimen of a new species with a

different overall gestalt from its congeners. The word *inusitus* is Latin for unusual, extraordinary, or odd. This name is an adjective in the nominative singular.

**Distribution** (Fig. 144). Chile: VII Región del Maule (1): Cauquenes.

**Temporal data.** July (1).



**FIGURES 10–14.** *Ampliodactylus inusitus* male holotype. 10, dorsal habitus; 11, oblique habitus; 12, lateral genitalia; 13, head and pronotum; 14, parameres.



**FIGURES 15–19.** *Ampliodactylus marmoratus* male. 15, dorsal habitus; 16, oblique habitus; 17, lateral genitalia; 18, head and pronotum; 19, parameres.

***Ampliodactylus marmoratus* (Curtis, 1844)**

Figs. 15–19, 144.

*Macrodactylus marmoratus* Curtis, 1844: 200. Type locality: “Chiloe.” Type series: see Smith (2008) for details.

**Diagnosis.** Length 7.0–9.0 mm. Dorsal color dark brown on head and pronotum, lighter brown on elytra; surface evenly setose except for patchy clumps on elytra. *Head*: clypeus with thinner, erect setae and frons with thicker, erect setae. Clypeus rounded; weakly reflexed. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club slightly longer than antennomeres 2–6 combined. *Pronotum*: surface moderately to densely punctate and setose, without longitudinal trough at middle. *Pygidium*: convex, conical; surface moderately punctate and setose. *Legs*: Tarsomeres 1–4 of similar length, tarsomeres 5 slightly longer. *Male genitalia*: parameres thick, separated basally within longitudinal trough; each side weakly separated medially, ventrally curved (Figs. 17, 19).

**Distribution by province** (specific datapoints in Fig. 144). Argentina: Neuquén, Río Negro, Chubut; Chile: XIV Región de Los Ríos, X Región de Los Lagos, XI Región de Aisén.



**FIGURES 20–24.** *Ampliodactylus modestus* male. 20, lectotype dorsal habitus; 21, lectotype oblique habitus; 22, lateral genitalia; 23, lectotype labels; 24, parameres.

***Ampliodactylus modestus* (Philippi, 1861), new combination**  
Figs. 20–24, 145.

*Schizochelus modestus* Philippi, 1861: 738. Type locality: “Valdivia.” Type series: lectotype male (Figs. 20–21, 23) at MNNC labeled a) “CHILE / Valdivia” (handwritten), b) “Holótipo” (typeset on orange paper), c) “Schizochelus / modestus / F. Philippi” (handwritten), d) “CHILE / M. N. / H. N. / Tipo / No / 2856” (typeset and handwritten), e) “SCHIZOCHELUS / MODESTUS / PHILIPPI, 1861 / LECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on red paper), f) “Southern Neotropical Scarabs / database # AS2600743 / Schizochelus modestus / Philippi, 1861 ♂ / DET: A.B.T.SMITH 2008” (typeset). **Lectotype here designated.**

**Diagnosis.** Length 4.5–6.0 mm. Dorsal and ventral color light brown with some light colored mottling; surface setose. **Head:** clypeus with thinner, erect setae and frons with thick recumbent setae. Clypeus broadly rounded;

reflexed with well-defined, upturned border. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club slightly longer than antennomeres 2–6 combined. *Pronotum*: surface moderately to densely punctate and setose, without longitudinal trough at middle. *Pygidium*: convex, conical; surface moderately punctate and setose. *Legs*: Tarsomeres 1 and 5 longer, tarsomeres 2, 3, 4 shorter on all tarsi. *Male genitalia*: parameres thick, separated basally within longitudinal trough; without sclerotized dorsal aedeagal process (Figs. 22, 24).

**Distribution by province** (specific datapoints in Fig. 145). Chile: XIV Región de Los Ríos (Philippi 1861).



**FIGURES 25–29.** *Ampliodactylus panguipullensis* male holotype. 25, dorsal habitus; 26, oblique habitus; 27, pygidium; 28, head and pronotum; 29, parameres.

***Ampliodactylus panguipullensis* Smith & Mondaca, new species**  
Figs. 25–29, 145.

**Type locality.** Chile: XIV Región de Los Ríos: Valdivia: 37 km SE Panguipulli, 39°45'S, 72°20'W.

**Type series.** One male holotype. Holotype male (Figs. 25–29) at SEMC labeled a) “CHILE: Valdivia / 37 km SE Panguipulli / 39°45'S, 72°20'W, 300 m / 14 Nov 1994, R. Leschen & C. Carlton #099 / ex: sifting leaf litter” (typeset), b) “AMPLIODACTYLUS / PANGUIPULLENSIS / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001211” (typeset).

**Description of holotype** (Figs. 25–29). Male. Length 6.0 mm, width 3.0 mm. Head brown, pronotum brown with tan mottling, elytra tan with light brown patches. Surface of head and pronotum evenly setose, elytra with patchier setae especially near apex; setae recumbent, white. *Head*: surface densely punctate with thinner, erect setae on clypeus and thicker, recumbent setae on frons. Clypeus truncate medially and rounded laterally; reflexed with well-defined, upturned border. Eyes prominent but not bulbous. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club approximately equal in length to antennomeres 2–6 combined. Labrum reduced, hidden below clypeus. Maxilla robust, triangular, basal width approximately equal to width of mentum; maxillary palpus with 4 palpomeres, apical palpomere extending beyond clypeus in dorsal view. Mentum bulbous with weak medial trough; labial palpus greatly reduced. *Pronotum*: surface moderately to densely punctate and setose. Pronotum widest medially. Lateral margin appearing smooth but with barely perceptible crenulations; with row of long, erect setae. *Elytra*: surface rugopunctate and setose except with smooth patches at apex, striae poorly-defined. *Venter*: setae with patchier distribution compared to dorsal surface. Metasternum with broad, deep trough. Abdomen with penultimate and terminal segments each almost twice the length of the shorter basal segments. Pygidium bulbous; surface moderately setose with microsculpturing. *Legs*: Tarsomeres 1 and 5 slightly longer, tarsomeres 2, 3, 4 slightly shorter on all tarsi. Claws broadly separated, symmetrical, each side cleft apically. Protibia with 2 apical teeth on outer margin, remainder of protibial margin smooth. Protibial spur absent. Metatibial spurs absent (presumably 2 present in females). *Genitalia*: parameres thick, separated basally within longitudinal trough; without sclerotized dorsal aedeagal process (Fig. 29).

**Etymology.** This species is named for the commune of Panguipulli, which contains the type locality.

**Distribution** (Fig. 145). Chile: XIV Región de Los Ríos (1): 37 km SE Panguipulli.

**Temporal data.** November (1).

**Remarks.** The only known specimen of this species was collected by sifting leaf litter.

#### *Ampliodactylus vestitus* (Philippi, 1864)

Figs. 30–34, 145.

*Schizochelus vestitus* Philippi, 1864: 447. Type locality: “Valdivia.” Type series: see Smith (2008) for details.

**Diagnosis.** Length 9.5–10.5 mm. Dorsal color dark brown on head and pronotum, lighter brown on elytra; surface evenly setose except for patchy clumps on elytra. *Head*: clypeus with thinner, erect setae and frons with thicker, erect setae. Clypeus rounded; weakly reflexed. *Pronotum*: surface moderately to densely punctate and setose, without longitudinal trough at middle. *Pygidium*: convex, conical; surface moderately punctate and setose. *Legs*: Tarsomeres 1–4 of similar length, tarsomeres 5 slightly longer. *Male genitalia*: parameres thick, separated basally within longitudinal trough; each side close to touching medially, ventrally curved (Figs. 32, 34).

**Distribution by province** (specific datapoints in Fig. 145). Chile: XIV Región de Los Ríos, X Región de Los Lagos.

#### *Extenuptyophis* Smith & Mondaca, new genus

**Type species.** *Extenuptyophis metropolitensis* Smith & Mondaca, new species, here designated.

**Description** (Figs. 35–44). Length 5.0–7.0 mm. Dorsal surface unicolored with even setal pattern (sometimes with some minor uneven patterning on head and pronotum). *Head*: clypeus parabolic, sometimes weakly sinuate, apex strongly reflexed. Mentum much longer than wide, triangular, flat or weakly concave. Antennae with 9 antennomeres, male club approximately equal to stalk in length. *Pronotum*: widest medially, width greater than length. *Legs*: protibia with two large, apical teeth on outer margin usually separate by a small tooth; medially and

basally with series of small teeth. Claws symmetrical, each side cleft apically. Protibial spurs present. Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres broad, enveloping a sclerotized dorsal aedeagal process (Figs. 39, 44).

**Etymology.** *Extenuoptyophis* is formed to indicate the similarity of this genus to species in the genus *Ptyophis*. “*Extenuo-*” is Latin for “to make small, reduce, diminish” in reference to the smaller size of the species compared to *Ptyophis*. The name is feminine in gender to match *Ptyophis*.

**Composition.** The two species in this genus are both endemic to southern South America.

**Remarks.** Although there were many specimens in various collections, the two species in this genus were previously misidentified. With the recent taxonomic work of Katovich (2008) and Smith (2008), it was final possible to properly identify these two species as new. This genus is distinguished from other Macrodactylini genera based on the following characters: total length less than 10 mm, clypeus parabolic with apex strongly reflexed, male antennal club with three antennomeres, mentum with length much greater than width, mentum with apex triangular, mentum surface flat or weakly concave without medial groove, protibia along outside edge saw-toothed with two larger teeth near apex, protibial spur present, mesosternal peg absent, parameres broad and enveloping a sclerotized dorsal aedeagal process.



**FIGURES 30–34.** *Ampliodactylus vestitus* male. 30, dorsal habitus; 31, oblique habitus; 32, lateral genitalia; 33, head and pronotum; 34, parameres.

**Key to species of *Extenuoptyophis***

1. Elytra, pygidium, and abdomen with long, hair-like setae (Figs. 40–41)..... *Extenuoptyophis metropolitensis* Smith & Mondaca, new species
- Elytra, pygidium, and abdomen with short, scale-like setae (Figs. 35–36)..... *Extenuoptyophis horridulus* Smith & Mondaca, new species



**FIGURES 35–39.** *Extenuoptyophis horridulus* male. 35, holotype dorsal habitus; 36, holotype oblique habitus; 37, paratype lateral genitalia; 38, holotype head and pronotum; 39, paratype parameres.

***Extenuoptyophis horridulus* Smith & Mondaca, new species**  
Figs. 35–39, 146.

**Type locality.** Chile: VIII Región del Biobío: Ñuble: Atacalco.

**Type series.** One male holotype, one female allotype, 31 male paratypes, and seven female paratypes.

Holotype male (Figs. 35–36, 38) at MNNC labeled a) “CHILE ÑUBLE / Atacalco / 4-XII-2003 / leg.J.Mondaca E.” (typeset), b) “EXTENUOPTYOPHIS / HORRIDULUS / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001379” (typeset). Allotype female at MNNC labeled a) “CHILE LINARES PROV. / Malcho (ex Fundo) / 27/28-XI-2004 / leg J. Mondaca” (typeset), b) “EXTENUOPTYOPHIS / HORRIDULUS / SMITH & MONDACA / ALLOTYPE ♀” (red label, handwritten and typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001380” (typeset). One male paratype at FMNH labeled a) “FUNDO MALCHO / Pre-Cord. Parral / Noviembre, 1956 / Leg: M. Rivera” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001348]. One male paratype at FMNH labeled a) “RECINTO / Cord. Nuble / 30-Noviembre-51 / Coll. L.E. Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001349]. One male paratype at CMNC labeled a) “RECINTO / Cord. Nuble / Diciemb-1953 / Leg: Rivera” (typeset), b) “H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll.” (typeset with black border) [database number SSSA3001350]. One male paratype at CMNC labeled a) “Prov. LINARES / Cord. Parral / Bulileo / 15-Dic. 1960 / Coll: M. Rivera” (typeset), b) “H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll.” (typeset with black border) [database number SSSA3001351]. Eighteen male and five female paratypes at CDFA and CMNC labeled a) “CHILE: Region VIII / Termas de Chillan Road, road / behind Hotel Los Perineor / 36°53.672S/071°28.811W / XI-29-2011, 4375' / Fred G. Andrews” (typeset) [database numbers SSSA3001352–SSSA3001369, SSSA3001381–SSSA3001385]. Three male and one female paratypes at CDFA and CMNC labeled a) “CHILE: Region VIII / Termas de Chillan Road / Puente Marchant / 36°54.388'S/071°32.111'W / XII-21-2011, 3350' / Fred G. Andrews” (typeset) [database numbers SSSA3001370–SSSA3001372, SSSA3001386]. One male paratype at JMEC labeled a) “Alto Vilches / Cord. de TALCA / Nov- 1989 / Th. FICHET” (handwritten and typeset) [database numbers SSSA3001373]. One male paratype at JMEC labeled a) “CHILE ÑUBLE PROV. / Las Trancas / 11-I-2005 / leg. Sergio Ocares” (typeset) [database number SSSA3001374]. One male paratype at BMNH labeled a) “♂” (typeset), b) “Chili.” (handwritten), c) “104” (handwritten), d) “Schizochelus / breviventris Phil. / Determined from / description. G.J.A.” (handwritten and typeset) [database number SSSA3001375]. One male paratype at BMNH labeled a) “E.Y.Western Coll. / B.M.1924—176.” (typeset), b) “Schizochelus / brevis Deyr. / Chili.” (handwritten and green paper), c) “British Museum / SCHIZOCHELUS / BREVIVENTRIS / Phil.” (typeset) [database number SSSA3001376]. One male paratype at BMNH labeled a) “Chili.” (typeset), b) “Chili / G.” (handwritten), c) “Nevinson Coll. / 1918—14.” (typeset), d) “Schizochelus?” (handwritten), e) “British Museum / SCHIZOCHELUS / BREVIVENTRIS / Phil.” (typeset) [database number SSSA3001377]. One male paratype at BMNH labeled a) “31350” (handwritten), b) “Germain” (handwritten), c) “Chili” (handwritten), d) “Fry Coll. / 1905-100.” (typeset) [database number SSSA3001378]. One female paratype at BMNH labeled a) “Germain” (handwritten), b) “Chili” (handwritten), c) “Fry Coll. / 1905-100.” (typeset) [database number SSSA3001387]. All paratypes listed above also bear a yellow paratype label and a database label with the database number and a barcode.

**Description of holotype** (Figs. 35–36, 38). Male. Length 6.2 mm, width 3.0 mm. Dorsal and ventral color dark brown. Dorsal surface entirely setose. Head and pronotum with recumbent, white or tawny setae; elytra with short, scale-like setae. *Head*: surface densely punctate and setose. Clypeus broadly parabolic; apex weakly sinuate, reflexed with well-defined, upturned border. Eyes prominent but not bulbous. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club approximately equal in length to antennomeres 1–6 combined. Labrum reduced, hidden below clypeus. Maxillary robust, triangular, basal width approximately equal to width of mentum; maxillary palpus with 4 palpomeres, apical palpomere extending beyond clypeus in dorsal view. Mentum approximately twice as long as wide, triangular with acute apex, surface slightly flat; labial palpus greatly reduced. *Pronotum*: surface moderately to densely punctate and setose; laterally with denser and lighter setae. Pronotum widest medially with smooth margins. *Elytra*: surface moderately to densely punctate and setose with microsculpturing, without distinguishable striae. *Venter*: setae longer and more erect compared to dorsal surface. Pygidium weakly convex; surface moderately punctate and setose with microsculpturing. *Legs*: protibia with 2 apical teeth on outer margin separated by 1 small tooth, remainder of protibial margin with 11 smaller teeth in a saw-tooth configuration. Claws narrowly separated, symmetrical, each side cleft apically. Protibial spur present, metatibial spurs absent. *Genitalia*: parameres broad, enveloping a broad, flat, sclerotized dorsal aedeagal process (Figs. 37, 39).

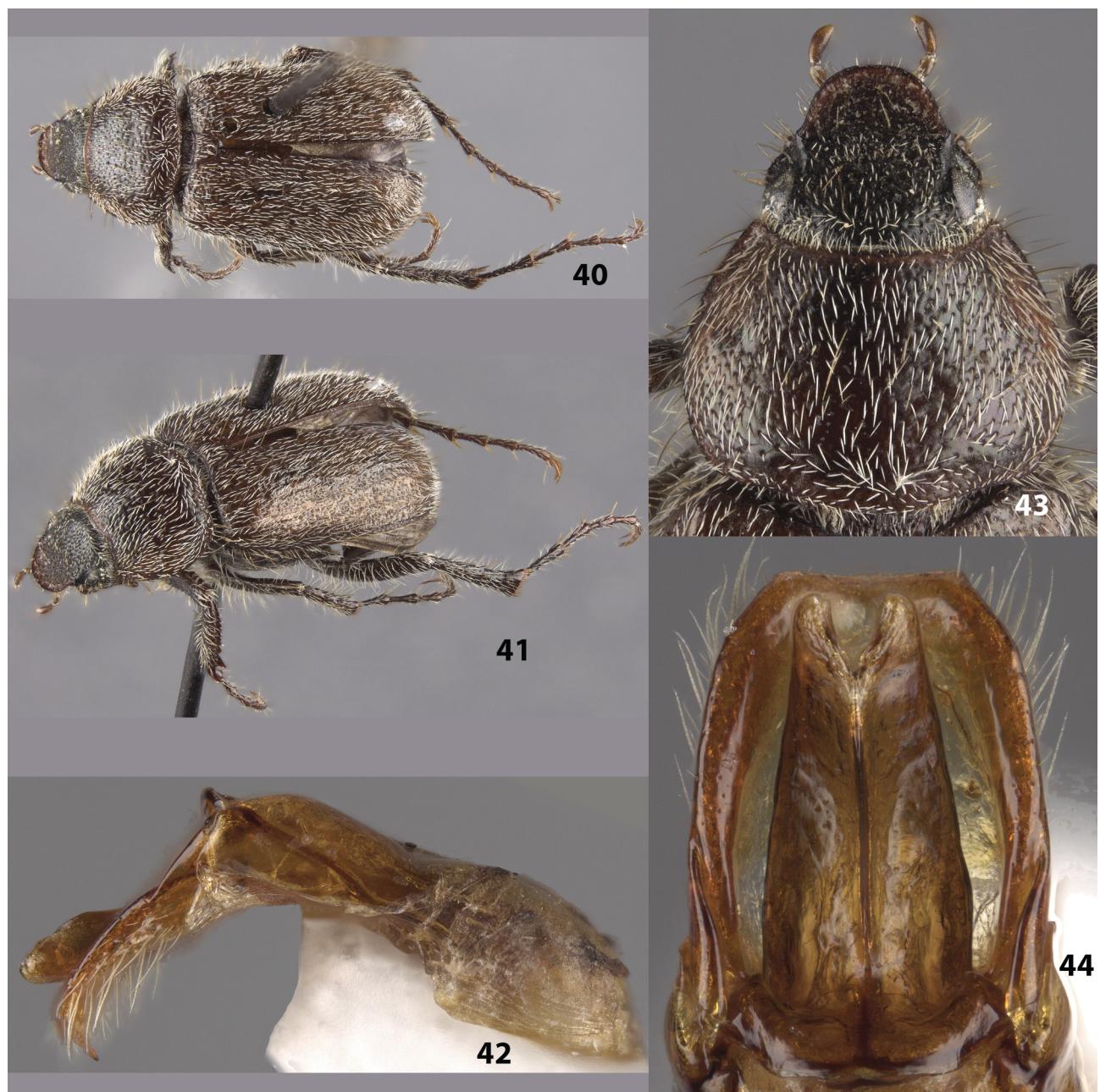
**Variation.** Length 5.2–7.0 mm. Dorsal color brown to dark brown. Females with antennal club length

distinctly shorter than length of antennomeres 1–6 combined (approximately equal in males); abdomen inflated (flat in males); with 2 metatibial spurs (both absent in males), spurs on one side of tarsal insertion.

**Etymology.** This species is named for the short, scale-like setae on the elytra. The Latin word *horridulus* means bristly or stubbly. This name is an adjective in the nominative singular.

**Distribution** (Fig. 146). Chile: VII Región del Maule: Alto Vilches, Bullileo, Fundo Malcho (Cordillera Parral), VIII Región del Biobío: Atacalco, Hotel Los Pirineos (road behind), Las Trancas, Puente Marchant, Recinto.

**Temporal data.** January (1), November (27), December (7).



**FIGURES 40–44.** *Extenuptyophis metropolitensis* holotype male. 40, dorsal habitus; 41, oblique habitus; 42, lateral genitalia; 43, head and pronotum; 44, parameres.

***Extenuptyophis metropolitensis* Smith & Mondaca, new species**  
Figs. 40–44, 146.

**Type locality.** Chile: Región Metropolitana de Santiago: Chacabuco: Tilitil, Caleu.

**Type series.** One male holotype, one female allotype, 133 male paratypes, and 15 female paratypes. Holotype male (Figs. 40–44) at MNNC labeled a) “Chacabuco / Til Til / Caleu / 19.11.1989 / Dr. M. Cerda” (handwritten), b) “COLL. CERDA / MNHN CHILE” (typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001333” (typeset), d) “EXTENUOPTYOPHIS / METROPOLITENSIS / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset). Allotype female at MNNC labeled a) “Chacabuco / Caleu / 2.12.1988 / Dr. M. Cerda” (handwritten), b) “COLL. CERDA / MNHN CHILE” (typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001334” (typeset), d) “EXTENUOPTYOPHIS / METROPOLITENSIS / SMITH & MONDACA / ALLOTYPE ♀” (red label, handwritten and typeset). Six male paratypes at CMNC and FMNH labeled a) “Prov. SANTIAGO / El Manzano / Nov. 1951 / Coll. L.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database numbers SSSA3001212–SSSA3001217]. One male paratype at FMNH labeled a) “Prov. SANTIAGO / El Manzano / 25,28 Oct. 1951 / Coll. L.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001218]. Four male paratypes at CMNC and FMNH labeled a) “Prov. SANTIAGO / Apoquindo / Enero-1964 / Coll.L.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database numbers SSSA3001219–SSSA3001222]. Six male paratypes at CMNC and FMNH labeled a) “EL CANELO / Stgo. XII-76 / Coll. L.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database numbers SSSA3001223–SSSA3001226]. One male paratype at FMNH labeled a) “EL MANZANO / Santiago / 30-V-1971” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001227]. Two male paratypes at FMNH labeled a) “Co. Vizcachas / Valpo. XII-82 / Coll: R.Madariaga” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001228–SSSA3001229]. One male paratype at FMNH labeled a) “Q. SN. RAMON / CORD. SANTIAGO” (handwritten), b) “24-I-1975 / Coll. R.Perez D'ARCE” (handwritten), c) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001230]. One male paratype at FMNH labeled a) “EL CANELO / (Santiago) / 12-Nov-48” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001231]. One male paratype at FMNH labeled a) “C. del Maipo / 13-VI-71 / COLL. L. Walter” (handwritten), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001232]. One male paratype at FMNH labeled a) “EL RADAL / Cord. Talca / 900, 1100 m” (typeset), b) “23,30-Nov-1957 / Coll:L.E.Pena” (typeset), c) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001233]. One male paratype at FMNH labeled a) “Los Arrayanes / NW. Rancagua / 1500m. XI-81 / Leg.M.Marin” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001234]. One male paratype at FMNH labeled a) “Prov.SANTIAGO / La Obra / Dic.1963 / CollL.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001235]. One male paratype at FMNH labeled a) “ACONCAGUA / Piscicultura / 1600Mt. 11,18-XI-63 / Coll.L.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001236]. Two male paratypes at FMNH labeled a) “El Manzano / 11.1951 / Peña leg.” (handwritten), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database numbers SSSA3001237–SSSA3001238]. One male paratype at FMNH labeled a) “Vs.DEL FLACO / Cord. Talca / 29-Nov-1957 / Coll:L.E.Pena” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001239]. Four male and three female paratypes at CMNC and FMNH labeled a) “El Canelo / Stgo. Chile / Nov. 1979” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database numbers SSSA3001240–SSSA3001243, SSSA3001338–SSSA3001340]. One male paratype at FMNH labeled a) “Rio Colorado / 1000m. Maipo / Stgo. 30-X-81 / Coll.L.E.Peña” (typeset), b) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset) [database number SSSA3001244]. One male paratype at FMNH labeled a) “EL CANELO / Stgo. XII-76 / Coll. L.E. Peña” (typeset) [database number SSSA3001245]. One male paratype at FMNH labeled a) “EL CANELO / Santiago / CHILE XII-50” (handwritten), b) “CNHM / Purchase ex / L.O. Howden” (typeset) [database number SSSA3001246]. One male paratype at UMCE labeled a) “Chile-Cordillera / Río Clarillo / 6/11-2/12-88 / C. González” (typeset and handwritten) [database number SSSA3001247]. One male paratype at UMCE labeled a) “Chile-Cordillera / Río Clarillo / 19.XI.87 / P. Estrada” (typeset and handwritten), b) “ex. Lithraea / caustica” (typeset) c) “bosque / esclerófilo” (typeset) [database number SSSA3001248]. Three male paratypes (all pointed on the same pin) at UMCE labeled a) “RIO LONTUE / Prov. Talca / col. Aravena / Cent.Ent.U.CHILE” (typeset) [database number SSSA3001249]. One male paratype at UMCE labeled a) “Chile, Curicó / Radal / 22.XI.86 / H. Toro” (typeset and handwritten) [database number SSSA3001250]. One male paratype at MNNC labeled a) “Caleu / Lo Marin / 20.11.1983 / Dr. M. Cerda” (handwritten), b) “COLL. CERDA / MNHN CHILE” (typeset) c) “Schizochelus /

pubescens / (Curtis) / M. CERDA-DTE1990 / M. Elgueta" (handwritten and typeset) [database number SSSA3001251]. Two male paratypes at CMNC and MNNC labeled a) "Santiago / La Obra / 10.11.1990 / S. Roitman" (handwritten), b) "COLL. CERDA / MNHN CHILE" (typeset) [database numbers SSSA3001252–SSSA3001253]. One male paratype at MNNC labeled a) "Santiago / La Obra / 2.12.1990 / S. Roitman" (handwritten), b) "COLL. CERDA / MNHN CHILE" (typeset) [database number SSSA3001254]. One male paratype at MNNC labeled a) "Santiago / La Obra / 27.11.1991 / E. González" (handwritten), b) "COLL. CERDA / MNHN CHILE" (typeset) [database number SSSA3001255]. One male paratype at MNNC labeled a) "Santiago / La Obra / 8.12.1991 / S. Roitman" (handwritten), b) "COLL. CERDA / MNHN CHILE" (typeset) [database number SSSA3001256]. Two male paratypes at CMNC and MNNC labeled a) "Santiago / La Obra / 16.10.1993 / S. Roitman" (handwritten), b) "COLL. CERDA / MNHN CHILE" (typeset) [database numbers SSSA3001257–SSSA3001258]. Three male paratypes (all carded on the same pin) at CMNC labeled a) "CHILE / Pcia. SANTIAGO / El Canelo / R. Gutierrez-leg. / Coll. Martínez. / DIC.-944" (handwritten), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset), c) "Schizochelus / sp. / A MARTINEZ-DET.1947" (handwritten and typeset) [database number SSSA3001259]. Two male paratypes (both carded on the same pin) at CMNC labeled a) "CHILE / Pcia. SANTIAGO / El Canelo / R. Gutierrez-leg. / Coll. Martínez. / DIC.-944" (handwritten), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset) [database number SSSA3001261]. Two male paratypes (both carded on the same pin) at CMNC labeled a) "CHILE / Pcia. SANTIAGO / El Canelo / Gutierrez-leg. / Coll. Martínez. / 20-XI-944." (handwritten), b) "Schizochelus / sp. / A MARTINEZ-DET.1947" (handwritten and typeset), c) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset) [database number SSSA3001260]. One male paratype at CMNC labeled a) "El Canelo / Santiago / CHILE XII 50" (handwritten), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset) [database number SSSA3001262]. One male paratype at CMNC labeled a) "Prov.SANTIAGO / El Manzano / Nov.1951 / Coll.L.E.Pena" (typeset), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset) [database number SSSA3001263]. One male paratype at CMNC labeled a) "Prov. SANTIAGO / Apoquindo / Enero-1964 / Coll.L.E.Pena" (typeset), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset) [database number SSSA3001264]. One male paratype at UCCC labeled a) "Chile. Santiago / La Obra / 5-XII-1988 / S. Roitman coll." (typeset) [database number SSSA3001265]. Two male paratypes at CMNC and MNNC labeled a) "CHILE – Stgo. / El Canelo / 19.11.44 / Gutierrez leg" (handwritten), b) "Schizochelus / pubescens / Curtis" (handwritten) [database numbers SSSA3001266–SSSA3001267]. One male paratype at MNNC labeled a) "Farellones / 2.200 m / 10.12.50 / Kuschel" (handwritten) [database number SSSA3001268]. One male paratype at MNNC labeled a) "Santiago. / El Canelo. 950 mt. / 9-XI-1963. / J. Valencia." (handwritten) [database number SSSA3001269]. Two male and one female paratypes at MNNC labeled a) "EL CANELO / 15.XII.1954" (handwritten) [database numbers SSSA3001270–SSSA3001271 and SSSA3001342]. Two male paratypes (pointed on the same pin) at MNNC labeled a) "A. Macul / Stgo. i.1954" (handwritten) [database number SSSA3001272]. One male paratype at MNNC labeled a) "Peñalolen / 1.XI.45" (handwritten) [database number SSSA3001273] (typeset). One male paratype at MNNC labeled a) "Stgo. C. del Maipo / La Obra / 27.NOV-1999 / Coll: A. Vera S." (typeset and handwritten) [database number SSSA3001274]. One male paratype at LEMQ labeled a) "CHILE: Maule / Rio teno, 800m. / 25–28.XI.1981. / L. Peña" (typeset) [database number SSSA3001275]. Three male paratypes at CMNC and USNM labeled a) "CHILE: Maule Prov. / Rio Teno, 800m / 25–27 Nov. 1981. / D. R. Davis" (typeset) [database numbers SSSA3001276–SSSA3001278]. Three male paratypes at CMNC and USNM labeled a) "CHILE:SantiagoProv. / Pilay, Rio Peuco / ca. 45km S. Santiago / 23–24 Nov. 1981. / D. R. Davis 800m" (typeset) [database numbers SSSA3001279–SSSA3001281]. One male paratype at FSCA labeled a) "CHILE: Santiago - / Cordillera, Reserva / Rio Clarillo / XI-XII-1989 / L. Stange / malaise trap" (typeset) [database number SSSA3001282]. One male paratype at CMNC labeled a) "ARGENTINA: Neuquén / RP 43, W Chos Malal / S37°15'55" W70°31'22" / Jan-9-2003, 1385 m / F.C.Ocampo, A.B.T. Smith" (typeset) [database number SSSA3001283]. Four male paratypes at CASC and CMNC labeled a) "CHILE, / Santiago / XII-10-1951 / L. Pena Collr." (typeset), b) "Dr. Alan R. Hardy / 2004 Donation to / California Academy / of Sciences" (typeset) [database numbers SSSA3001284–SSSA3001287]. One male paratype at CASC labeled a) "CHILE: / El Canelo. / Santiago / XII.50. Pena" (handwritten), b) "E. R. LEACH / COLLECTION" (typeset), c) "Schizochelus / modestus / Ph. / det. G.Frey 1967/68" (handwritten and typeset) [database number SSSA3001288]. One male paratype at CASC labeled a) "Ramirez Col / El Canelo / 8.XI.44 / Santiago" (handwritten), b) "E. P. REED / Collection" (typeset), c) "Schizochelus / modestus / Ph. / det. G.Frey 1967/68" (handwritten and typeset) [database number

SSSA3001289]. One male paratype at CASC labeled a) "CHILE / Baños / Cauquenes / 12./1903 / HERBST" (typeset and handwritten), b) "Moser determ. / Pristerophora / picipennis Sol." (typeset and handwritten), c) "L.W. Saylor / Collection" (typeset), d) "Pristerophora / picipennis / Sol. / DET. / L. W. Saylor" (handwritten and typeset) [database number SSSA3001290]. Two male paratypes at BMNH labeled a) "CHILI: / Santiago / El Canelo" (typeset on upper side), b) "1948.399" (handwritten on underside) [database numbers SSSA3001291–SSSA3001292]. Twelve male paratypes at BMNH and CMNC labeled a) "CHILI: / Santiago, / El Canelo. / B.M. 1946 - 165." (typeset) [database numbers SSSA3001293–SSSA3001304]. One male paratype at BMNH labeled a) "E. Y. Western Coll. / B.M.1924—176" (typeset), b) "Chresmatodus / pubescens / (Sol.) / 1680" (handwritten) [database number SSSA3001305]. Two male paratypes at UMCE labeled a) "Chile, Cordillera / R.N. Río Clarillo / 7/11-4/12/2007 / J. Solervicens" (typeset) [database numbers SSSA3001306–SSSA3001307]. Two male paratypes at UMCE labeled a) "Chile, Cordillera / R.N. Río Clarillo / 4/12/07-8/1/08 / J. Solervicens" (typeset) [database numbers SSSA3001308–SSSA3001309]. One male paratype at UMCE labeled a) "Chile, Cordillera / R.N. Río Clarillo / 8/1 - 5/2/2008 / P. Estrada" (typeset) [database number SSSA3001310]. One male paratype at JMEC labeled a) "CHILE O'HIGGINS / Chacayes / 20.XI.1994 / leg. C. Rojas" (handwritten) [database number SSSA3001311]. One male paratype at JMEC labeled a) "CHILE MAIPO PROV. / El Canelo / 12.I.2008 / leg. C. Fortino" (handwritten) [database number SSSA3001312]. One male paratype at JMEC labeled a) "CHILE MAIPO PROV. / El Canelo / 12.12.2010 / Col. J.Mondaca E." (handwritten) [database number SSSA3001313]. Two male paratypes at FRFC labeled a) "LA OBRA / C. del Maipo / Cord. Stgo. 800 m / 08–DIC–2006 / Leg A. Ramirez" (typeset) [database numbers SSSA3001314–SSSA3001315]. One male paratype at FRFC labeled a) "Embalse "El Yeso" / Cord. de Santiago / 2300 m. / 16 – DIC – 2007 / Leg. F. Ramirez" (typeset) [database number SSSA3001316]. Two male paratypes at JMEC labeled a) "CHILE CACHAPOAL / R.N.Río Cipreses / Noviembre 1999 / col.J.Mondaca E." (typeset) [database numbers SSSA3001317–SSSA3001318]. Two male paratypes at JMEC labeled a) "CHILE CORDILLERA / La Obra / 14-XII-1991 / col.J.Mondaca E." (typeset) [database numbers SSSA3001319–SSSA3001320]. One male paratype at JMEC labeled a) "CHILE CACHAPOAL / R.N.Río Cipreses / Diciembre 1997 / col.J.Mondaca E." (typeset) [database number SSSA3001321]. One male paratype at JMEC labeled a) "CHILE CORDILLERA / El Manzano / 1-XI-2005 / col. D. Muñoz" (typeset) [database number SSSA3001322]. One male paratype at JMEC labeled a) "CHILE SANTIAGO / El Canelo / Diciembre 1999 / leg. J. Mondaca E." (typeset) [database number SSSA3001323]. Three female paratypes at CMNC and FMNH labeled a) "EL MANZANO / Santiago / Noviembre-1951 / Coll:L.E.Pena" (typeset), b) "FMNH, 1986 / L. Pena Coll. / Acc. # 17-422" (typeset) [database numbers SSSA3001335–SSSA3001337]. One female paratype at MNNC labeled a) "Caleu / C° El Roble / 6-12-1982 / Dr. M. Cerda" (handwritten), b) "COLL. CERDA / MNHN CHILE" (typeset) [database number SSSA3001341]. One female paratype at CMNC labeled a) "CHILE: Santiago / Rio Clarillo / FIT & pans nr. stream / 3.xi-7.xii.1989 / S.A. Marshall" (handwritten), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset) [database number SSSA3001343]. One female paratype at FRFC labeled a) "LAS TRANCAS / Chillán VIII Reg. / 1200 mts. / 09 – Dic – 2000 / Leg. A. Ramírez C" (typeset) [database number SSSA3001344]. One female paratype at JMEC labeled a) "CHILE Santiago / El Manzano / Nov. 2004 / leg. R. P. de Arce" (typeset) [database number SSSA3001345]. Two female paratypes at JMEC labeled a) "CHILE SANTIAGO / Yerba Loca / 17-X-2009 / col. J. Mondaca E." (typeset) [database numbers SSSA3001346–SSSA3001347]. One male paratype at CMNC (stored in alcohol) labeled a) "CHILE: V Región Valparaiso / Cachapoal: Cajon de Pangal / 1.x.2003 / M. Guerrero" (typeset), b) "UNSM SCARAB DNA / VOUCHER SPECIMEN / AS245 / APR 2004" (typeset and handwritten) [database number SSSA30011414]. One male and one female paratype at CMNC (stored in alcohol) labeled a) "CHILE: V Región Valparaiso / San Antonio: El Quiso / 6.xii.2003 / J. Mondaca E." (typeset), b) "UNSM SCARAB DNA / VOUCHER SPECIMEN / AS249 / APR 2004" (typeset and handwritten) [database numbers SSSA30011415–SSSA30011416]. One male paratype at CMNC (stored in alcohol) labeled a) "CHILE: RM / Chacabuco: Til-Til / 21.xi.2004 / J. Mondaca E." (typeset) [database number SSSA30011417]. One female paratype at CMNC (stored in alcohol) labeled a) "CHILE: Región VII (MAULE) / Cordillera Parral, Fundo Malcho / S 36°14'46.5" W71°19'57.5" / 757 m; 27-28 NOV 2004 / at BL/MV light/in flight / M.J. Paulsen & J. Mondaca" (typeset) [database number SSSA30011418]. One male paratype at JMEC labeled a) "CHILE CORDILLERA / El Manzano / 21-X-1996 / col. J. Mondaca E." (typeset) [database number SSSA3001324]. Three male paratypes at SRTC labeled a) "CHILE, RM / CAJON DEL MAIPO / EL CANELO / 16-XII-1996 / LEG. S. ROTHMANN" (typeset) [database numbers SSSA3001325–SSSA3001327]. One male paratype at SRTC labeled a) "CHILE, R.M. / Prov. CORDILLERA / EL CANELO / 26-

X-1996 / LEG. S. ROTHMANN" (handwritten) [database number SSSA3001328]. Two male paratypes at SRTC labeled a) "CHILE – VI REG. / MACHALI / chacayes / Trampa U.V. / 30 Sept. 2010 / Leg. I. San Martín" (handwritten) [database numbers SSSA3001329–SSSA3001330]. One male paratype at SRTC labeled a) "CHILE – R.M. / Tilttil / Trampa funnel / 10 Ene. 2012 / Leg. J. Valenzuela" (handwritten) [database number SSSA3001331]. One male paratype at SRTC labeled a) "El Canelo / Nov. 52 / Peña, Coll." (handwritten) [database number SSSA3001332]. All paratypes bear a yellow paratype label and a database label with the database number and a barcode.

**Description of holotype** (Figs. 40–44). Male. Length 5.5 mm, width 2.8 mm. Dorsal and ventral color dark brown. Dorsal surface entirely setose with even coat of recumbent, white setae interspersed with longer, erect, tawny setae. *Head*: surface densely punctate and setose. Clypeus parabolic, apex reflexed with well-defined, upturned border. Eyes prominent but not bulbous. Antennae with 9 antennomeres; antennal club with 3 antennomeres, club approximately equal in length to antennomeres 1–6 combined. Labrum reduced, hidden below clypeus. Maxilla robust, triangular, basal width approximately equal to width of mentum; maxillary palpus with 4 palpomeres, apical palpomere extending beyond clypeus in dorsal view. Mentum approximately twice as long as wide, surface slightly concave; labial palpus greatly reduced. *Pronotum*: surface moderately to densely punctate and setose; lateral margin with distinct row of long, erect setae. Pronotum widest medially with smooth margins. *Elytra*: surface moderately to densely punctate and setose, without distinguishable striae. *Venter*: punctuation and setae similar to dorsal surface. Pygidium weakly convex; surface densely to moderately punctate and setose. *Legs*: protibia with 2 apical teeth on outer margin separated by 1 small tooth, remainder of protibial margin with 9 smaller teeth in a saw-tooth configuration. Claws narrowly separated, symmetrical, each side cleft apically. Protibial spur present, metatibial spurs absent. *Genitalia*: parameres broad, enveloping a protruding, sclerotized dorsal aedeagal process (Figs. 42, 44).

**Variation.** Length 5.1–7.0 mm. Dorsal color brown to dark brown. Females with antennal club length distinctly shorter than length of antennomeres 1–6 combined (approximately equal in males); abdomen inflated (flat in males); with 2 metatibial spurs (both absent in males), spurs on one side of tarsal insertion.

**Etymology.** This species is named for Región Metropolitana de Santiago, where much of the type series was collected.

**Distribution by province** (specific datapoints in Fig. 146). Argentina: Neuquén; Chile: V Región de Valparaíso, Región Metropolitana de Santiago, VI Región del Libertador General Bernardo O'Higgins, VII Región del Maule, VIII Región del Biobío.

**Temporal data.** January (10), May (1), September (2), October (8), November (56), December (41).

**Remarks.** This species was mentioned in Solervicens (2014) as occurring in desert scrub, coastal scrub, and sclerophyllous forest in Reserva Nacional Río Clarillo and was collected using Barber traps, light traps, and Malaise traps. The only known Argentinean specimen was found dead under a rock by the side of the road.

### *Insimuloissacaris* Smith & Mondaca, new genus

**Type species.** *Insimuloissacaris nahuelbutensis* Smith & Mondaca, new species, here designated.

**Description** (Figs. 45–50). Length 17.0–18.0 mm. Dorsal surface uncolored with even setal pattern (head and pronotum more setose than elytra). *Head*: clypeus parabolic, apex reflexed. Mentum with length approximately equal to width; apex triangular, weakly bilobed; surface weakly concave, with medial groove. Antennae with 9 antennomeres, male club approximately equal to funicle and scape in length. *Pronotum*: widest medially, width greater than length. *Legs*: protibia with two apical teeth on outer margin. Claws symmetrical, each side with strong, subapical tooth. Protibial spurs absent. Males without metatibial spurs. *Male genitalia*: parameres long, simple, symmetrical (Fig. 50).

**Etymology.** *Insimuloissacaris* is formed to indicate some similarities with the genus *Issacaris*. *Insimulo* is Latin and means to charge or accuse falsely. The name is feminine in gender to match *Issacaris*.

**Composition.** This genus is monotypic and endemic to southern South America.

**Remarks.** This new genus is distinguished from similar large-bodied genera based on the following characters: clypeus broadly parabolic (narrow and elongate in *Issacaris*, quadrate in *Neuquenodactylus*), frons as wide as clypeal base (distinctly narrower in *Issacaris*), male antennal club not greatly elongate and broad compared

to funicle and scape (significantly more elongate and broad in *Issacaris*, significantly more elongate in *Neuquenodactylus*), mentum with length approximately equal to width (length greater than width in *Issacaris*, width greater than length in *Neuquenodactylus* and *Pseudodicrania*), mentum with apex triangular (elongate and reflexed in *Issacaris*), mentum surface weakly concave with medial groove (with weak suture in *Issacaris*, flat without medial groove or pit in *Neuquenodactylus* and *Pseudodicrania*), protibial spur absent (present in *Issacaris* and *Pseudodicrania*), claws with strong subapical tooth and small sub-basal tooth (medial tooth in *Neuquenodactylus*), mesosternal peg present but not protruding apically (absent in *Issacaris*), parameres thin and elongate (short and thick in *Issacaris* and *Pseudodicrania*), parameres slightly curved (bent at right angle in apical half in *Issacaris*).

***Insimuloissacaris nahuelbutensis* Smith & Mondaca, new species**

Figs. 45–50, 146.

**Type locality.** Chile: IX Región de la Araucanía: Parque Nacional Nahuelbuta, Coimallín.

**Type series.** Holotype male at MNNC labeled a) “CHILE: IX Región (Araucanía) / P.N. Nahuelbuta, Coimallín / 25-8-2004 / Alvaro Marín” (typeset), b) “INSIMULOISSACARIS / NAHUELBUTENSIS / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001198” (typeset). One male paratype at CMNC (stored in alcohol) labeled a) “CHILE: IX Región (Araucanía) / P.N. Nahuelbuta, Coimallín / 25-8-2004 / Alvaro Marín” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001413” (typeset). One male paratype at FMNH (broken specimen missing head and five legs) labeled a) “CARAMAVIDA / Nahuelbuta (W) / (Arauco)” (typeset), b) “1200, 1400 mt / 1, 6-Enero-1954 / Coll: L.E.Pena” (typeset), c) “FMNH, 1986 / L. Pena Coll. / Acc. # 17-422” (typeset), d) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001206” (typeset). Four male paratypes at CMNC labeled a) “CHILE MALLECO / P.N. Nahuelbuta / Coimallín, 3-VII-2004 / leg. Erika Benavides” (typeset) [database numbers SSSA3001199–SSSA3001202]. Two male paratypes at MNNC labeled a) “CHILE MALLECO / P.N. Nahuelbuta / Coimallín, 3-VII-2004 / leg. Erika Benavides” (typeset) [database numbers SSSA3001203–SSSA3001204]. One male paratype at CMNC labeled a) “CHILE MALLECO / P.N. Nahuelbuta / 24-VII-1984 / col. H.L. Pincheira” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001205” (typeset). Eight male paratypes at JMEC labeled a) “CHILE MALLECO / P.N. Nahuelbuta / Coimallín, 3-VII-2004 / leg. Erika Benavides” (typeset) [database numbers SSSA3001437–SSSA3001444]. All paratypes bear a yellow paratype label and a database label with the database number and a barcode.

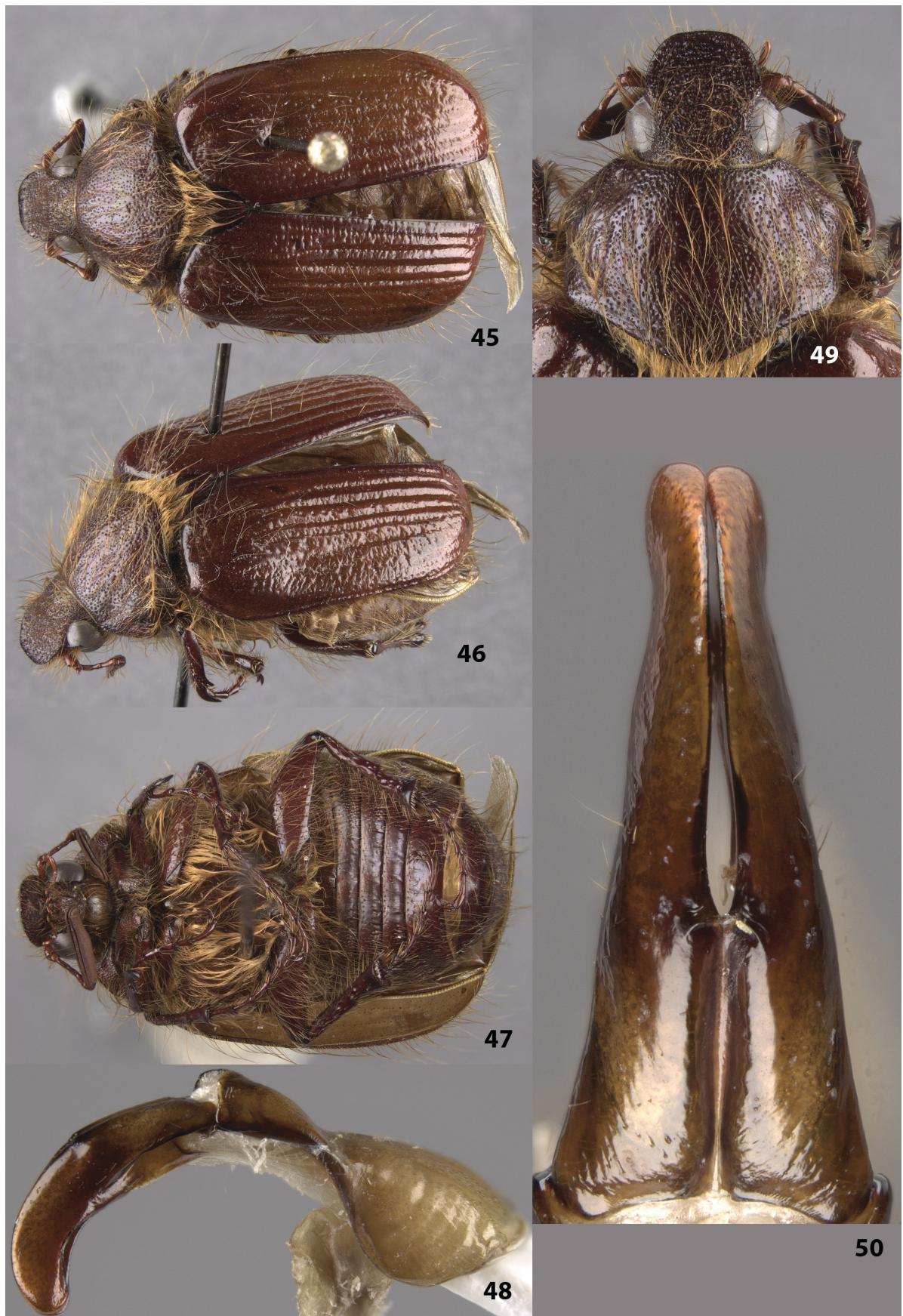
**Description of holotype** (Figs. 45–50). Length 16 mm. Dorsal surface brown; head and pronotum with long, dense setae; elytra with long, dense setae mediobasally. *Head*: surface rugopunctate. Clypeus broadly parabolic with apex slightly reflexed. Eye small, flush with side of head in dorsal view. Mentum rhomboidal with distinct, longitudinal, medial furrow. Antennae with 9 antennomeres; club consisting of 3 antennomeres, longer than antennomeres 1–6 combined. *Pronotum*: disc densely punctate with long, dense setae. *Elytra*: disc with weakly impressed, weakly punctate striae. Lateral margin with fringe of long setae. *Venter*: surface with long, dense setae on sternum and shorter, sparse setae on abdominal sternites. Mesosternal peg vestigial. *Legs*: color brown. Protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws, and metatarsal claws symmetrical, each side with cleft apex. Protibial spur absent. Tarsi longer than tibiae. Metatibial spurs absent. *Male genitalia*: parameres laterally flattened, with even thickness (Figs. 48, 50).

**Variation.** Male length 15–17 mm. Male paratypes similar in all aspects to the holotype. Females unknown.

**Etymology.** This species is named for Parque Nacional Nahuelbuta, where the type series was collected.

**Distribution** (Fig. 146). Chile (18). VIII Región del Biobío (1): Caramavida. IX Región de la Araucanía (17): Coimallín (Parque Nacional Nahuelbuta), Parque Nacional Nahuelbuta.

**Temporal data.** January (1), July (15), August (2).



**FIGURES 45–50.** *Insimuloissacaris nahuelbutensis* holotype male. 45, dorsal habitus; 46, oblique habitus; 47, ventral habitus; 48, lateral genitalia; 49, head and pronotum; 50, parameres.

## Genus *Issacaris* Fairmaire, 1889

*Issacaris* Fairmaire, 1889: cxvii. Type species: *Issacaris petalophora* Fairmaire, 1889, by monotypy.

**Diagnosis.** Length 16–21 mm. Dorsal surface light brown to dark brown with pale yellow setae on head and margins of pronotum and elytron. *Head*: clypeus parabolic to rounded with apex reflexed (more so in males), sometimes elongate. Mentum elongate with an acute apex, medially concave or with a weak suture. Antennae with 9 antennomeres, club with 3 antennomeres. Male club greatly elongate, longer than length of head length; female club slightly shorter than length of antennomeres 1–6. *Pronotum*: widest subapically, width greater than length. *Venter*: mesosternal peg absent. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws, and metatarsal claws symmetrical, each side a medial tooth and a smaller basal tooth. Protibial spur prominent. Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres thick, symmetrical (Figs. 55, 60, 65, 71, 76).

**Composition.** There are five species in this genus and all are endemic to southern South America.

**Remarks.** Contrary to Katovich (2008), all specimens observed have nine antennomeres. This genus is distinguished from similar large-bodied genera based on the following characters: clypeus narrow and elongate (broadly parabolic in *Insimuloissacaris* and *Pseudodicrania*, quadrate in *Neuquenodactylus*), frons distinctly narrower than clypeal base (not distinctly narrower in *Insimuloissacaris*, *Neuquenodactylus*, and *Pseudodicrania*), male antennal club significantly more elongate and broad compared to funicle and scape (not greatly elongate or broad in *Insimuloissacaris* and *Pseudodicrania*, not significantly broader in *Neuquenodactylus*), mentum with length greater than width (length approximately equal to width in *Insimuloissacaris*, width greater than length in *Neuquenodactylus* and *Pseudodicrania*), mentum with apex elongate and reflexed (triangular in *Insimuloissacaris*, *Neuquenodactylus*, and *Pseudodicrania*), mentum surface with weak suture (weakly concave with medial groove in *Insimuloissacaris*, flat without medial groove or pit in *Neuquenodactylus* and *Pseudodicrania*), protibial spur present (absent in *Insimuloissacaris* and *Neuquenodactylus*), claws with strong subapical tooth and small sub-basal tooth (medial tooth in *Neuquenodactylus*), mesosternal peg absent (present but not protruding apically in *Insimuloissacaris*, *Neuquenodactylus*, and *Pseudodicrania*), parameres short and thick (thin and elongate in *Insimuloissacaris* and *Neuquenodactylus*), parameres bent at right angle in apical half (slightly curved in *Insimuloissacaris*, *Neuquenodactylus*, and *Pseudodicrania*).

### Key to species of *Issacaris*

1. Clypeus not elongate (length approximately equal to width); clypeal margin strongly reflexed; clypeal apex broadly rounded, weakly sinuate medially (Fig. 59) ..... *Issacaris falsa* Smith & Mondaca, new species
- Clypeus distinctly elongate (length greater than width); clypeal margin weakly reflexed; clypeal apex rounded, not sinuate medially (e.g., Fig. 54) ..... 2
2. Eyes distinctly bulging beyond eye canthus, eye width approximately equal to width of frons between eyes (Figs. 61, 64) .....  
- ..... *Issacaris petalophora* Fairmaire
- Eyes large but not distinctly bulging (just moderately rounded) beyond eye canthus, eye width less than the width of frons between eyes (Figs. 54, 70, 75) ..... 3
3. Frontoclypeal suture straight (Fig. 70) ..... *Issacaris setosiventris* Gutiérrez
- Frontoclypeal suture weakly rounded towards frons (Fig. 75) ..... 4
4. Dorsally distinctly bicolored with tan elytra and darker head, pronotum, and pygidium (Figs. 51–52) ..... *Issacaris bullocki* Gutiérrez
- Dorsally uniformly dark in color (Figs. 72–73) ..... *Issacaris sola* Smith & Mondaca, new species

### *Issacaris bullocki* Gutiérrez, 1952

Figs. 51–55, 147.

*Issacaris bullocki* Gutiérrez, 1952: 221. Type locality: “Chile: Prov. de Malleco: Angol; Cerros de Nahuelbuta, Angol.” Type series: holotype and allotype at UCCC (examined).

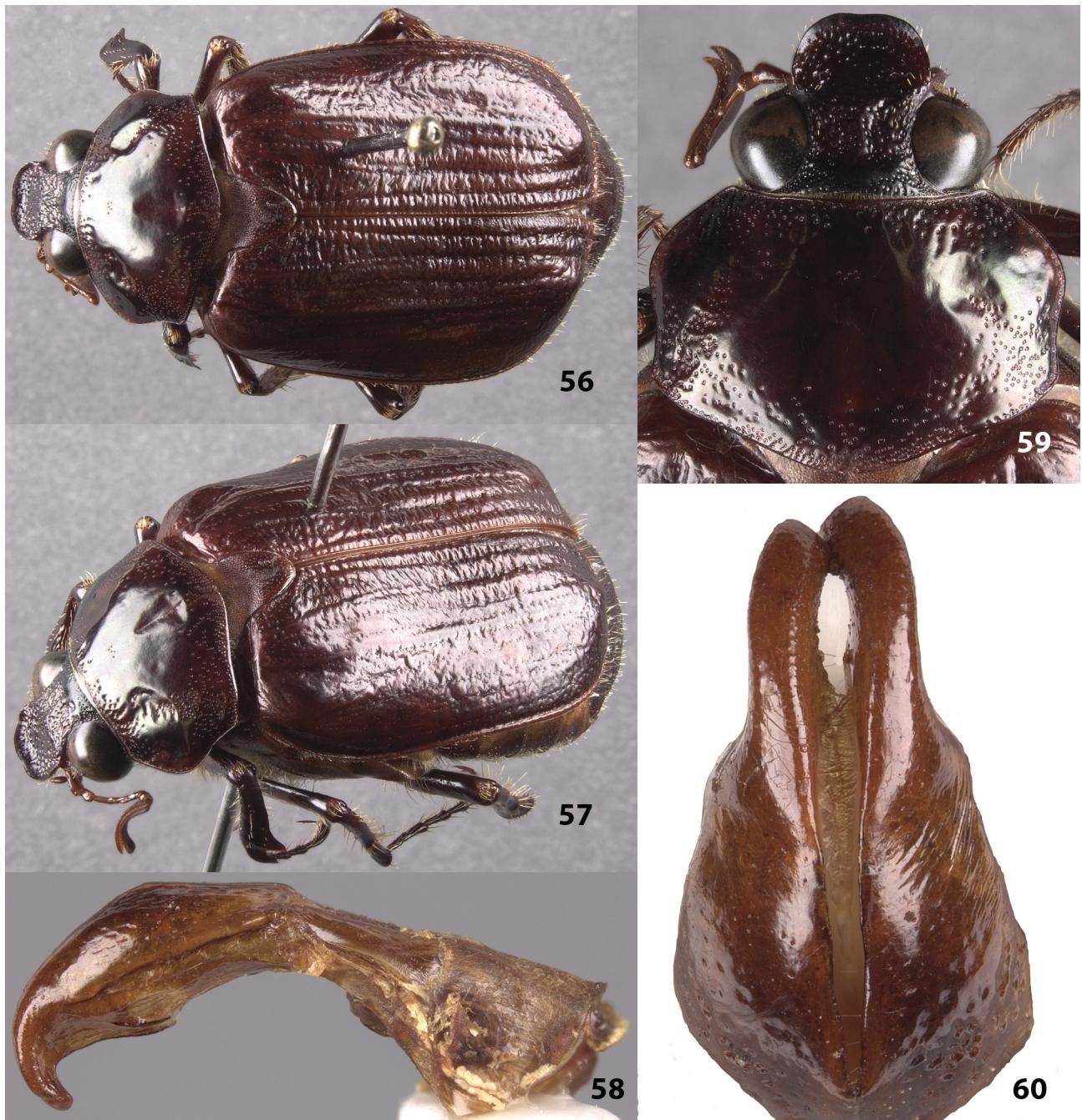
**Diagnosis.** Length 17 mm. Legs uncolored, dark brown. *Head*: dorsal surface with dense, thin, erect setae.

Clypeus flat, elongate, with large punctures; apex parabolic, slightly reflexed. Frontoclypeal suture straight, somewhat obscured by punctures. Eyes not bulbous, not strongly protruding laterally; eye width less than frons width. *Pronotum*: punctuation moderate across entire disc. *Elytra*: striae well defined. *Pygidium*: surface granulate; entirely setose with thick, recumbent setae scattered with thin, erect setae. *Male genitalia*: parameres thick, clavate apically, with apical spine. Inner sutures of parameres thinner, widely separated (Fig. 55).

**Distribution by province** (specific datapoints in Fig. 147). Chile: VIII Región del Biobío, IX Región de la Araucanía.



**FIGURES 51–55.** *Issacaris bullocki* male. 51, dorsal habitus; 52, oblique habitus; 53, lateral genitalia; 54, head and pronotum; 55, parameres.



**FIGURES 56–60.** *Issacaris falsa* holotype male. 56, dorsal habitus; 57, oblique habitus; 58, lateral genitalia; 59, head and pronotum; 60, parameres.

***Issacaris falsa* Smith & Mondaca, new species**

Figs. 56–60, 147.

**Type locality.** Chile, IX Región de la Araucanía, Parque Nacional Nahuelbuta.

**Type series.** One male holotype and eight male paratypes. Holotype male at CMNC labeled a) “Süd-Chile 15.2.40 / Puerto Puyuhuapi / leg. G.H. Schwabe / 120d” (typeset and handwritten), b) “H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll.” (typeset), c) “Issacaris / setosiventris / Gutiérrez / Fiede K. Katovich 02” (handwritten on orange label), d) “Southern Neotropical Scarabs / database # AS2615679 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008” (typeset), e) “ISSACARIS / FALSA / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset). One male paratype at USNM labeled a) “CHILE: Osorno

Province / P.N. Puyehue, 600meters / ca.2kmS. Aguas Calientes / 10–16 February 1979 / D.&M.Davis &B.Akerbergs" (typeset), b) "Southern Neotropical Scarabs / database # AS2615678 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at CMNC labeled a) "Süd-Chile 21.2.40 / Puerto Puyuhuapi / leg. G.H. Schwabe / 127" (typeset and handwritten), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset), c) "Southern Neotropical Scarabs / database # AS2615680 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at CMNC labeled a) "Chile. III.48 / Puyehue / Pr. Osorno" (handwritten), b) "H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll." (typeset), c) "Issacaris ♀/ petalophora. Fai / R. Gutiérrez-Det. 49" (handwritten and typeset), d) "PARATIPO" (typeset), e) "Issacaris / setosiventris ♀/ Gutiérrez / A.Martínez-det. 19" (handwritten and typeset), f) "Southern Neotropical Scarabs / database # AS2615681 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at UCCC labeled a) "Chile. III.49 / Puyehue / Osorno / Gutierr" (handwritten), b) "Colección / R. Gutiérrez / 1958" (typeset with blue ink), c) "ISSACARIS / SETOSIVENTRIS / GUTIÉRREZ, 1952 / paratype ♂" (handwritten and typeset on yellow label) d) "Southern Neotropical Scarabs / database # AS2615682 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008" (typeset). One male paratype at JMEC labeled a) "CHILE- XI REGION / La Junta / pradera 95 / Col: SAG XI", b) "SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001192" (typeset). One male paratype at SAGC labeled a) "CHILE - Aysén / Pto. Cisnes / La Junta. Trampa UV / 19 Mar. 2013 / Leg. U. Aránguiz", b) "SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001193" (typeset). One male paratype at SAGC labeled a) "CHILE - Aysén / Pto. Cisnes / La Junta. Trampa UV / 19 Mar. 2013 / Leg. U. Aránguiz", b) "SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001194" (typeset). One male paratype at UCCC labeled "ALOTIPO ♀" (typeset and handwritten on orange label), b) "Chile-III-49 / Puyehue / Osorno / Gutierr" (handwritten), c) "Issacaris / setosiventris Gut / ♀ R Gutiérrez-Det52" (handwritten and typeset), "Colección / R. Gutiérrez / 1958" (typeset with blue ink) d) "PARATYPE ♂ / *Issacaris falsa* / Smith & Mondaca / Des. J. Mondaca E." (typeset on red label). All paratypes (except the last one listed) bear a yellow paratype label.

**Description of holotype** (Figs. 56–60). Length 21.5 mm. Dorsal surface shiny dark brown. Setae pale yellow. Legs bicolored, light brown basally and dark brown apically. *Head*: dorsal surface with scattered, short setae. Clypeus concave, not elongate, with large punctures; apex parabolic, strongly reflexed. Frontoclypeal suture obscured by punctures. Frons rugopunctate except along basal margin, concave on either side of longitudinal ridge. Eyes bulbous, strongly protruding laterally. Mentum elongate with weak, longitudinal, medial trough. Antennae with 9 antennomeres (antennomeres 4 and 5 somewhat fused); club elongate, consisting of 3 antennomeres, approximately equal to antennomeres 1–6 in length. *Pronotum*: disc glabrous (lateral setae likely abraded); punctuation moderate apically and dorsally, largely impunctate medially. *Elytra*: disc apically with very few scattered, short setae; with wrinkled striae. Lateral margin without fringe of setae (likely abraded). *Pygidium*: surface densely punctate, setose; convex with medio-apical flat area. *Venter*: sternum covered with long, thick setae; abdominal sternites with a thinner coating of shorter setae. Mesosternal peg absent. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws, and metatarsal claws symmetrical, each side a medial tooth and a smaller basal tooth. Protibial spur present, extending half the length of protarsomere 1. Tarsomere 1 and 5 elongate, approximately double the length compared with tarsomeres 2, 3, and 4. Metatibial spurs absent. *Male genitalia*: parameres thick, inflated medially; tapered, strongly curved, without spines apically. Inner sutures of parameres touching or in close proximity (Fig. 60).

**Variation.** Male length 19.5–21.5 mm. Male paratypes similar in all aspects to the holotype except all have distinct antennomeres; most have more setae in the lateral depressions of the frons, punctate areas of the pronotum, along lateral margin of elytra, and on pygidium; some specimens have a shorter protibial spur. Female unknown.

**Etymology.** This species is so named for the previous incorrect species and sex determinations for most specimens in the type series. *Falsa* is Latin for false and should be treated as an adjective in the nominative singular.

**Distribution** (Fig. 147). Chile: X Región de Los Lagos (3): Parque Nacional Puyehue, Parque Nacional Puyehue (approximately 2 km S Aguas Calientes). XI Región de Aisén (5): La Junta, Puerto Cisnes (La Junta), Puerto Puyuhuapi.

**Temporal data.** February (3), March (5).



**FIGURES 61–66.** *Issacaris petalophora* neotype male. 61, dorsal habitus; 62, oblique habitus; 63, lateral genitalia; 64, head and pronotum; 65, parameres; 66, labels.

***Issacaris petalophora* Fairmaire, 1889**

Figs. 61–66, 147.

*Issacaris petalophora* Fairmaire, 1889: cxviii. Type locality: “Chili.” Type series: neotype male (Figs. 61–66) at MNNC labeled a) “NIELOL TCO / IX REGION CHILE / COLL / B GUIÑEZ” (handwritten), b) “29-VI-1990 / NIELOL” (handwritten), c) “Southern Neotropical Scarabs / database # AS2615671 / *Issacaris petalophora* / Fairmaire, 1889 ♂ / DET: A.B.T.SMITH 2008” (typeset), d) “ISSACARIS / PETALOPHORA / FAIRMAIRE, 1889 / DET: A.B.T. SMITH / NEOTYPE ♂” (handwritten and typeset). **Neotype here designated.**

**Diagnosis.** Length 18–19 mm. Legs unicolored, dark brown. *Head*: dorsal surface with patchy, thin, erect setae. Clypeus flat, elongate, with large punctures; apex parabolic, reflexed. Frontoclypeal suture straight, somewhat

obscured by punctures. Eyes bulbous, strongly protruding laterally; eye width approximately equal to frons width. *Pronotum*: punctuation sparsely scattered across entire disc. *Elytra*: striae with well-defined striae. *Pygidium*: surface smooth with large punctures; setose with scattered, thin, erect setae. *Male genitalia*: parameres thick, clavate apically, with apical spine. Inner sutures of parameres thinner, widely separated (Fig. 65).

**Distribution by province** (specific datapoints in Fig. 147). Chile: IX Región de la Araucanía, XIV Región de Los Ríos.

**Remarks.** All of the collections cited in the *Specimens* section were searched along with numerous other European collections and no trace could be found of the original type material for *Issacaris petalophora*. Since the bulk of Fairmaire's collection was deposited in the MNHN and BMNH, we can only conclude that the original type material has been lost. A reasonably intact specimen with precise label data is designated as the neotype as this is within the vague original type locality of "Chili".



**FIGURES 67–71.** *Issacaris setosiventris* paratype male. 67, dorsal habitus; 68, oblique habitus; 69, lateral genitalia; 70, head and pronotum; 71, parameres.

## *Issacaris setosiventris* Gutiérrez, 1952

Figs. 67–71, 147.

*Issacaris setosiventris* Gutiérrez, 1952: 219. Type locality: “Chile: Prov. Osorno: Puyehue.” Type series: holotype male at UCCC labeled “HOLOTIPO” (typeset on orange label), b) “Chile-III-49 / Puyehue / Osorno / Gutierr” (handwritten), c) “*Issacaris / setosiventris* Gut / ♂ R Gutiérrez-Det52” (handwritten and typeset), “Colección / R. Gutiérrez / 1958” (typeset with blue ink). “Allotype” male (incorrectly identified as *Issacaris setosiventris* and incorrectly identified as a female by Gutiérrez 1952) at UCCC labeled “ALOTIPO ♀” (typeset and handwritten on orange label), b) “Chile-III-49 / Puyehue / Osorno / Gutierr” (handwritten), c) “*Issacaris / setosiventris* Gut / ♀ R Gutiérrez-Det52” (handwritten and typeset), “Colección / R. Gutiérrez / 1958” (typeset with blue ink) d) “PARATYPE ♂ / *Issacaris falsa* / Smith & Mondaca / Des. J. Mondaca E.” (typeset on red label). One male paratype at UCCC labeled a) “PARATIPO” (typeset on orange label), b) “Chile-III-49 / Puyehue / Osorno / Gutierr” (handwritten), c) “Colección / R. Gutiérrez / 1958” (typeset with blue ink), d) “*Issacaris / setosiventris / Gut. / Det.: Martinez-77*” (handwritten and typeset with blue ink), e) “Southern Neotropical Scarabs / database # AS2615669 / *Issacaris setosiventris* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008” (typeset). One male paratype at UCCC labeled a) “PARATIPO” (typeset on orange label), b) “Chile-III-49 / Puyehue / Osorno / Gutierr” (handwritten), c) “Colección / R. Gutiérrez / 1958” (typeset with blue ink), d) “*Issacaris / setosiventris / Gut. / Det.: Martinez 71*” (handwritten and typeset with blue ink), e) “Southern Neotropical Scarabs / database # AS2615670 / *Issacaris setosiventris / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008*” (typeset). One male paratype (incorrectly identified as *Issacaris setosiventris* and incorrectly identified as a female by Gutiérrez 1952) at CMNC labeled a) “Chile-III-48 / Puyehue / Pr. Osorno” (handwritten), b) “H. & A. HOWDEN / COLLECTION / ex. A. Martinez coll.” (typeset), c) “*Issacaris ♀ / petalophora. Fai / R. Gutiérrez-Det. 49*” (handwritten and typeset), d) “PARATIPO” (typeset), e) “*Issacaris / setosiventris ♀ / Gutiérrez / A. Martinez-det.19*” (handwritten and typeset), f) “Southern Neotropical Scarabs / database # AS2615681 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008” (typeset) g) “ISSACARIS / FALSA / SMITH & MONDACA / PARATYPE ♂” (handwritten and typeset on yellow label). One male paratype (incorrectly identified as *Issacaris setosiventris* and incorrectly identified as a female by Gutiérrez 1952) at UCCC labeled a) “Chile. III.49 / Puyehue / Osorno / Gutierr” (handwritten), b) “Colección / R. Gutiérrez / 1958” (typeset with blue ink), c) “ISSACARIS / SETOSIVENTRIS / GUTIÉRREZ, 1952 / paratype ♂” (handwritten and typeset on yellow label) d) “Southern Neotropical Scarabs / database # AS2615682 / *Issacaris bullocki / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008*” (typeset), e) “ISSACARIS / FALSA / SMITH & MONDACA / PARATYPE ♂” (handwritten and typeset on yellow label).

**Diagnosis.** Length 17–19 mm. Legs unicolored, dark brown. *Head*: dorsal surface with patchy, thin, erect setae. Clypeus flat with large punctures; apex rounded, slightly reflexed. Frontoclypeal suture straight, somewhat obscured by punctures. Eyes weakly bulbous, somewhat protruding laterally; eye width less than frons width. *Pronotum*: punctuation sparsely scattered across entire disc. *Elytra*: striae with well-defined striae. *Pygidium*: surface granulate; entirely setose with thick, recumbent setae scattered with thin, erect setae. *Male genitalia*: parameres thick, clavate apically, with apical spine. Inner sutures of parameres thick, widely separated (Fig. 71).

**Distribution by province** (specific datapoints in Fig. 147). Chile: XIV Región de Los Ríos.

**Remarks.** Gutiérrez (1952) designated what he thought was a female *Issacaris setosiventris* as the allotype. In actual fact, this specimen is a male *Issacaris falsa*. A second male *Issacaris falsa* from the CMNC collection designated as a paratype of *Issacaris setosiventris* was incorrectly identified as female by Gutiérrez (1952). Since the “allotype” of *Issacaris setosiventris* is the same sex as the holotype, it should be considered a paratype.

## *Issacaris sola* Smith & Mondaca, new species

Figs. 72–76, 147.

**Type locality.** Chile, X Región de Los Lagos, Osorno, Bahía Mansa.

**Type series.** Male holotype. Holotype male (Figs. 72–76) at MNNC labeled a) “Bahia Mansa. / Osorno. / 26-IX-1968. / Col. M. Ponce S.” (handwritten), b) “Southern Neotropical Scarabs / database # AS2615683 / *Issacaris bullocki* / Gutiérrez, 1952 ♂ / DET: A.B.T.SMITH 2008” (typeset), c) “ISSACARIS / SOLA / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset).

**Description of holotype** (Figs. 72–76). Length 17.0 mm. Dorsal surface shiny dark brown with slightly lighter striations on the elytra. Thin setae pale yellow, thicker scales white. Legs and ventral surface with brown to dark brown coloration. *Head*: dorsal surface with long, erect setae on clypeus. Clypeus flat, slightly elongate, with large punctures; apex parabolic, weakly reflexed. Frontoclypeal suture somewhat obscured by punctures. Frons

strongly punctate medially, with weakly defined longitudinal ridge. Eyes not bulbous, not protruding laterally beyond canthus. Mentum elongate, moderately concave medially. Antennae with 9 antennomeres; club elongate, consisting of 3 antennomeres, significantly longer than antennomeres 1–6. *Pronotum*: disc with long, erect setae around margin (with some abraded areas); recumbent, scale-like setae laterally adjacent to margin. Punctuation moderate apically and dorsally; medially with sparse, scattered punctures. *Elytra*: disc apically with very few scattered, long setae; with punctate striae. Lateral margin with fringe of setae. *Pygidium*: surface densely punctuate, densely setose; convex. *Venter*: sternum covered with long, thick setae; abdominal sternites with a thinner coating of shorter setae. Mesosternal peg absent. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Mesotarsal claws, and metatarsal claws symmetrical, each side a medial tooth and a smaller basal tooth (protarsal claws both missing). Protibial spur present, extending one quarter the length of protarsomere 1. Tarsomere 1 and 5 distinctly longer in comparison with tarsomeres 2, 3, and 4. Metatibial spurs absent. *Male genitalia*: parameres thick, inflated; slightly tapered, strongly curved, without spines apically. Inner sutures of parameres only touching or in close proximity in apical half (Fig. 76).

**Etymology.** This species is so named because the holotype was the only specimen found. *Sola* is Latin for alone and should be treated as an adjective in the nominative singular. For a double meaning, SOLA is also the acronym for “Sacred Order of the Lamellate Antennae”, which is the name of the Scarab Workers Annual Symposium held at the annual meetings of the Entomological Society of America.

**Distribution** (Fig. 147). Chile: X Región de Los Lagos (1): Bahía Mansa.

**Temporal data.** September (1).

## Genus *Macroductylus* Dejean, 1821

*Macroductylus* Dejean, 1821: 58. Type species: *Melolontha subspinosa* Fabricius, 1775 by subsequent designation (Evans 2003).

*Stenothorax* Harris, 1827: 8. Type species: *Melolontha subspinosa* Fabricius, 1775, by monotypy.

*Chremastodus* Solier, 1851: 103. Type species: *Chremastodus pubescens* Solier, 1851 by subsequent designation (Evans 2003).

**Diagnosis.** Length 7–10 mm. Dorsal surface brown to black, covered in scales (males) or just setae (females). *Head*: clypeus quadrate with apex weakly sinuate, weakly reflexed. Mentum approximately twice as long as wide; apex parabolic; surface with medial groove. Antennae with 9 antennomeres. Antennal club consisting of 3 antennomeres, club shorter than funicle and scape in length. *Pronotum*: widest medially, length greater than width. *Venter*: mesosternal peg absent. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Claws symmetrical, each side apically cleft. Protibial spur absent. Metatibial spurs absent in males, females have 2 metatibial spurs.

**Composition.** There are 111 species in this genus that occur from Canada to southern South America. Two species have been recorded in southern South America.

## Key to southern South American species of *Macroductylus*

Males have no metatibial spurs, a flat or concave abdomen, scales covering the body, and are generally light in color. Females have two metatibial spurs, a convex abdomen, no scales, and are dark to black in color.

1. Males with long, erect setae interspersed with scales on disc of pronotum and abdomen (in two distinct longitudinal lines), dorsal and ventral surface flattened in lateral view. Females bicolored with chestnut brown elytra and dark brown body, body covered with light colored setae ..... *Macroductylus chilensis* Solier
- Males with long, erect setae along margins of pronotum but generally not on the disc; abdomen with a central patch of erect setae organized more latitudinally, dorsal and ventral surface distinctly convex in lateral view. Females black with dark setae covering body ..... *Macroductylus farinosus* Philippi



**FIGURES 72–76.** *Issacaris sola* holotype male. 72, dorsal habitus; 73, oblique habitus; 74, lateral genitalia; 75, head and pronotum; 76, parameres.

***Macroductylus chilensis* Solier, 1851**

Figs. 77–78, 148.

*Macroductylus chilensis* Solier, 1851: 115. Type locality: “la provincia de Coquimbo.” Type series: see Smith (2008) for details.

*Chremastodus pubescens* Solier, 1851: 103. Type locality: “la provincia de Coquimbo.” Type series: see Smith (2008) for details.

**Diagnosis.** The characters used in the key will diagnose this species from *M. farinosus*.

**Distribution by province** (specific datapoints in Fig. 148). Chile: IV Región de Coquimbo.



**FIGURES 77–80.** *Macroductylus*. 77, *Macroductylus chilensis* dorsal habitus; 78, *Macroductylus chilensis* oblique habitus; 79, *Macroductylus farinosus* neotype dorsal habitus; 80, *Macroductylus farinosus* neotype oblique habitus.

### ***Macroductylus farinosus* Philippi, 1864**

Figs. 79–80, 148.

*Macroductylus farinosus* Philippi, 1864: 442. Type locality: “Chile: VII Región del Maule: Linares: Estero Leiva” (based on the neotype). The original type locality was “Andes prov. de Lineares.” Type series: see Smith (2008) for details.

*Macroductylus crassipes* Philippi, 1864: 444. Type locality: “Chile: VII Región del Maule: Linares: Estero Leiva” (based on the neotype). The original type locality was “Chile.” Type series: see Smith (2008) for details.

*Macroductylus nigrinus* Philippi, 1864: 443. Type locality: “Chile: VII Región del Maule: Linares: Estero Leiva” (based on the neotype). The original type locality was “Chile.” Type series: see Smith (2008) for details.

**Diagnosis.** The characters used in the key will diagnose this species from *M. chilensis*.

**Distribution by province** (specific datapoints in Fig. 148). Chile: IV Región de Coquimbo, Región Metropolitana de Santiago, VII Región del Maule, VIII Región del Biobío.

### **Genus *Modialis* Fairmaire & Germain, 1860**

*Modialis* Fairmaire & Germain, 1860: 267. Type species: *Modialis prasinella* Fairmaire & Germain, 1860, by monotypy. *Acanthosternum* Philippi, 1861: 739. Type species: *Acanthosternum splendens* Philippi, 1861, by monotypy.



**FIGURES 81–87.** *Modialis prasinella* male. 81, dorsal habitus; 82, oblique habitus; 83, lateral genitalia; 84, lectotype oblique habitus; 85, lectotype labels; 86, parameres; 87, ventral habitus.

**Diagnosis.** Length 20–25 mm. Dorsal surface shiny green to yellowish green with sparse, white setae. *Head*: clypeus rectangular with apex strongly reflexed (more so in males). Mentum rhomboidal with distinct, longitudinal, medial furrow. Antennae with 9 antennomeres, male club approximately equal to stalk in length, female club distinctly shorter than stalk in length. *Pronotum*: widest basally, width greater than length. *Venter*: mesosternal peg prominent, projecting forward to procoxae. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws (females only), and metatarsal claws symmetrical, each side with 2 teeth in basal half. Mesotarsal claws in males asymmetrical, inside medial tooth twisted and enlarged into a lobe-like structure. Protibial spurs present. Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres with elongate structures both dorsally and ventrally (Figs. 83, 86).

**Composition.** This genus is monotypic and endemic to southern South America.

### ***Modialis prasinella* Fairmaire & Germain, 1860**

Figs. 81–87, 149.

*Modialis prasinella* Fairmaire & Germain, 1860: 267. Type locality: “Valdivia.” Type series: lectotype male (Figs. 84–85) at MNHN labeled a) “Chili / Germain” (handwritten on green paper), b) “Modialis / prasinella / L. K.” (handwritten on light blue paper), c) “Type / Fairmaire” (handwritten on green paper), d) “Ex Coll. Deyr. / IN ED BROWN” (typeset), e) “MODIALIS / PRASINELLA / FAIRMAIRE & GERMAIN / LECTOTYPE / A.B.T. SMITH ♂” (handwritten and typeset on red paper), f) “ACANTHOSTERNUM / SPLENDENS / PHILIPPI, 1861 / NEOTYPE ♂” (handwritten and typeset on red paper), g) “Southern Neotropical Scarabs / database # AS2600322 ♂ / *Modialis prasinella* / Fairmaire and Germain, 1860 / DET: A.B.T.SMITH 2005” (typeset). **Lectotype here designated.** One male paralectotype at MNHN labeled a) “151” (handwritten), b) “TYPE” (typeset on red paper), c) “Modialis / prasinella / n.g – Mf / Chili” (handwritten), d) “MUSÉUM PARIS / 1906 / Coll. Léon FAIRMAIRE” (typeset), e) “MODIALIS / PRASINELLA / FAIRMAIRE & GERMAIN / PARALECTOTYPE / A.B.T. SMITH ♂” (handwritten and typeset on yellow paper), f) “Southern Neotropical Scarabs / database # AS2600319 ♂ / *Modialis prasinella* / Fairmaire and Germain, 1860 / DET: A.B.T.SMITH 2005” (typeset). One male paralectotype at MNHN labeled a) “CHILI.” (typeset), b) “MUSÉUM PARIS / 1906 / Coll. Léon FAIRMAIRE” (typeset), c) “Modialis / prasinella / Fair. / PARATYPE” (handwritten and typeset), d) “MODIALIS / PRASINELLA / FAIRMAIRE & GERMAIN / PARALECTOTYPE / A.B.T. SMITH ♂” (handwritten and typeset on yellow paper), e) “Southern Neotropical Scarabs / database # AS2600320 ♂ / *Modialis prasinella* / Fairmaire and Germain, 1860 / DET: A.B.T.SMITH 2005” (typeset). One male paralectotype at MNHN labeled a) “151” (handwritten), b) “MUSÉUM PARIS / 1906 / Coll. Léon FAIRMAIRE” (typeset), c) “Modialis / prasinella / Fair. / PARATYPE” (handwritten and typeset), d) “MODIALIS / PRASINELLA / FAIRMAIRE & GERMAIN / PARALECTOTYPE / A.B.T. SMITH ♂” (handwritten and typeset on yellow paper), e) “Southern Neotropical Scarabs / database # AS2600321 ♂ / *Modialis prasinella* / Fairmaire and Germain, 1860 / DET: A.B.T.SMITH 2005” (typeset).

*Acanthosternum splendens* Philippi, 1861: 739. Original type locality: “Valdivia.” Type series: Neotype male (Figs. 84–85) at MNHN, the same specimen as the lectotype for *Modialis prasinella* detailed above. **Neotype here designated.**

**Diagnosis.** See generic diagnosis.

**Distribution by province** (specific datapoints in Fig. 149). Argentina: Neuquén; Chile: VII Región del Maule, VIII Región del Biobío, IX Región de la Araucanía, XIV Región de Los Ríos, X Región de Los Lagos.

**Remarks.** All of the collections cited in the *Specimens* section were searched along with numerous other European collections and no trace could be found of the original type material for *Acanthosternum splendens*. Since the bulk of Philippi’s collection was deposited in the NMPC and Museum für Naturkunde (Berlin, Germany), we can only conclude that the original type material has been lost. The lectotype of *Modialis prasinella* was selected as the neotype for *Acanthosternum splendens* in order to make the two names objective synonyms. The type locality for both names was originally “Valdivia” so are an exact match.

### ***Neuquenodactylus* Smith & Mondaca, new genus**

**Type species.** *Neuquenodactylus ramus* Smith & Mondaca, new species, here designated.

**Description** (Figs. 88–90, 92). Length 15.0–17.0 mm. Dorsal surface distinctly bicolored with black and yellowish-brown elytra; with even setal pattern (elytra glabrous). *Head*: clypeus quadrate, apex strongly reflexed. Mentum with width greater than length; apex triangular; surface flat, without medial groove or pit. Antennae with

9 antennomeres; male club greatly elongate, much longer than funicle and scape. *Pronotum*: widest medially, width greater than length. *Legs*: protibia with two apical teeth on outer margin. Claws symmetrical, each side with distinct, sub-basal tooth. Protibial spurs present. Males without metatibial spurs. *Male genitalia*: parameres long, simple, symmetrical (Figs. 91, 93).

**Etymology.** *Neuquenodactylus* is formed with the first part a toponym for the province of Neuquén and the second part indicating the classification of this genus in the tribe Macrodactylini. The name is masculine in gender.

**Composition.** This genus is monotypic and endemic to southern South America.

**Remarks.** This new genus is distinguished from similar large-bodied genera based on the following characters: clypeus quadrate (broadly parabolic in *Insimuloissacaris* and *Pseudodicrania*, narrow and elongate in *Issacaris*), frons as wide as clypeal base (distinctly narrower in *Issacaris*), male antennal club significantly elongate compared to funicle and scape (not elongate in *Insimuloissacaris* and *Pseudodicrania*, significantly broader in *Issacaris*), mentum with width greater than length (length approximately equal to width in *Insimuloissacaris*, length greater than width in *Issacaris*), mentum with apex triangular (elongate and reflexed in *Issacaris*), mentum surface flat without medial groove or pit (weakly concave with medial groove in *Insimuloissacaris*, with weak suture in *Issacaris*), protibial spur absent (present in *Issacaris* and *Pseudodicrania*), claws with medial tooth (strong subapical tooth and small sub-basal tooth in *Insimuloissacaris*, *Issacaris*, and *Pseudodicrania*), mesosternal peg present but not protruding apically (absent in *Issacaris*), parameres thin and elongate (short and thick in *Issacaris* and *Pseudodicrania*), parameres slightly curved (bent at right angle in apical half in *Issacaris*).

### ***Neuquenodactylus ramus* Smith & Mondaca, new species**

Figs. 88–93, 149.

**Type locality.** Argentina: Neuquén: Piedra del Águila.

**Type series.** Male holotype and two male paratypes. Holotype male at NMW labeled a) “ARGENTINIEN / Neuquen P.d.Aquila / 12.9.1980 leg. KOVAC” (typeset), b) “NEUQUENODACTYLUS / RAMUS / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset), c) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSA3001195” (typeset). One male paratype at NMW labeled a) “ARGENTINIEN / Neuquen P.d.Aquila / 12.9.1980 leg. KOVAC” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSA3001196” (typeset). One male paratype at CMNC labeled a) “ARGENTINIEN / Neuquen P.d.Aquila / 12.9.1980 leg. KOVAC” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSA3001197” (typeset). Both paratypes bear a yellow paratype label.

**Description of holotype** (Figs. 88–90, 92). Length 16 mm. Head, pronotum, scutellum, ventral surface, pygidium shiny black; elytra tan with black border, border thicker along suture and apically. Dorsal surface covered with long, dense setae except elytra glabrous. *Head*: surface rugopunctate. Clypeus quadrate with apex strongly reflexed. Eye small, flush with side of head in dorsal view. Mentum parabolic, apex acute, surface weakly concave medially. Antennae with 9 antennomeres; club consisting of 3 antennomeres, greatly elongate. *Pronotum*: disc densely punctate with long, dense setae. Lateral margin without a distinct fringe of long setae. *Elytra*: disc glabrous with punctate striae. Lateral margin with fringe of long setae. *Venter*: surface with long, dense setae on sternum and shorter, sparse setae on abdominal sternites. Mesosternal peg vestigial. *Legs*: color brown. Protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws, and metatarsal claws symmetrical, each side with medial tooth. Protibial spur present. Tarsi longer than tibiae. Metatibial spurs absent.

**Variation.** Male length 16–18 mm. Male paratypes similar in all aspects to the holotype. *Male genitalia*: parameres laterally flattened, slightly enlarged apically (Figs. 91, 93). Females unknown.

**Etymology.** This species is named for the long antennomeres of the antennal club. *Ramus* is Latin for antlers and should be considered a noun in apposition.

**Distribution** (Fig. 149). Argentina (3). Neuquén (3): Piedra del Águila.

**Temporal data.** September (3).



**FIGURES 88–93.** *Neuquenodactylus ramus* male. 88, holotype dorsal habitus; 89, holotype oblique habitus; 90, holotype ventral habitus; 91, paratype lateral genitalia; 92, holotype head and pronotum; 93, paratype parameres.

## Genus *Phytholaema* Blanchard, 1851

*Phytholaema* Blanchard, 1851: 218. Type species: *Areoda mutabilis* Solier, 1851, by monotypy.

*Lacris* Fairmaire & Germain, 1860: 268. Type species: *Lacris dilutipes* Fairmaire & Germain, 1860, by monotypy.

*Melicurus* Germain, 1905: 470. Type species: *Phytholaema herrmanni* Germain, 1901 by subsequent designation (Smith 2002).

**Diagnosis.** Length 9–16 mm. Dorsal surface light tan to dark brown with pale yellow setae. *Head*: clypeus rectangular to rounded with apex strongly reflexed (more so in males). Mentum rhomboidal with distinct, longitudinal, medial suture. Antennae with 8 antennomeres. Male club consisting of 4 antennomeres, approximately equal to stalk in length; female club consisting of 3 antennomeres, distinctly shorter than stalk in length. Males with antennomere 4 elongate, approximately equal in length to antennomeres 1–3 combined. *Pronotum*: widest medially, width greater than length. *Venter*: mesosternal peg vestigial. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws, and metatarsal claws symmetrical, each side with 2 teeth in basal half. Protibial spur vestigial or absent (seems to be broken off in the vast majority of specimens). Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres dorsally elongate, symmetrical (Figs. 99, 105, 111, 117).

**Composition.** There are four species in this genus and all are endemic to southern South America.

### Key to species of *Phytholaema*

1. Pronotum distinctly bicolor, tan to brown (sometimes with metallic green reflections) laterally and pale yellow medially (Figs. 104, 116) ..... 2
- Pronotum unicolored, sometimes slightly lighter medially (Figs. 98, 110) ..... 3
2. Lateral dark band on pronotum with a distinct light patch (Figs. 102, 104). Male parameres as in Fig. 105 ..... *Phytholaema fenestra* Smith & Mondaca, new species
- Lateral dark band on pronotum uniform, without light patch (Figs. 114, 116). Male parameres as in Fig. 117 ..... *Phytholaema mutabilis* (Solier)
3. Mesotarsi distinctly shorter than mesotibia. Pronotum medially glabrous with small, indistinct, scattered punctures (Fig. 98). Dorsal color usually dark brown (Fig. 94). Male parameres as in Fig. 99 ..... *Phytholaema dilutipes* (Fairmaire & Germain)
- Mesotarsi equal to or longer than mesotibia. Pronotum medially setose with distinct punctures (Fig. 110). Dorsal color usually light brown (Figs. 107, 112). Male parameres as in Fig. 111 ..... *Phytholaema herrmanni* Germain

### *Phytholaema dilutipes* (Fairmaire & Germain, 1860)

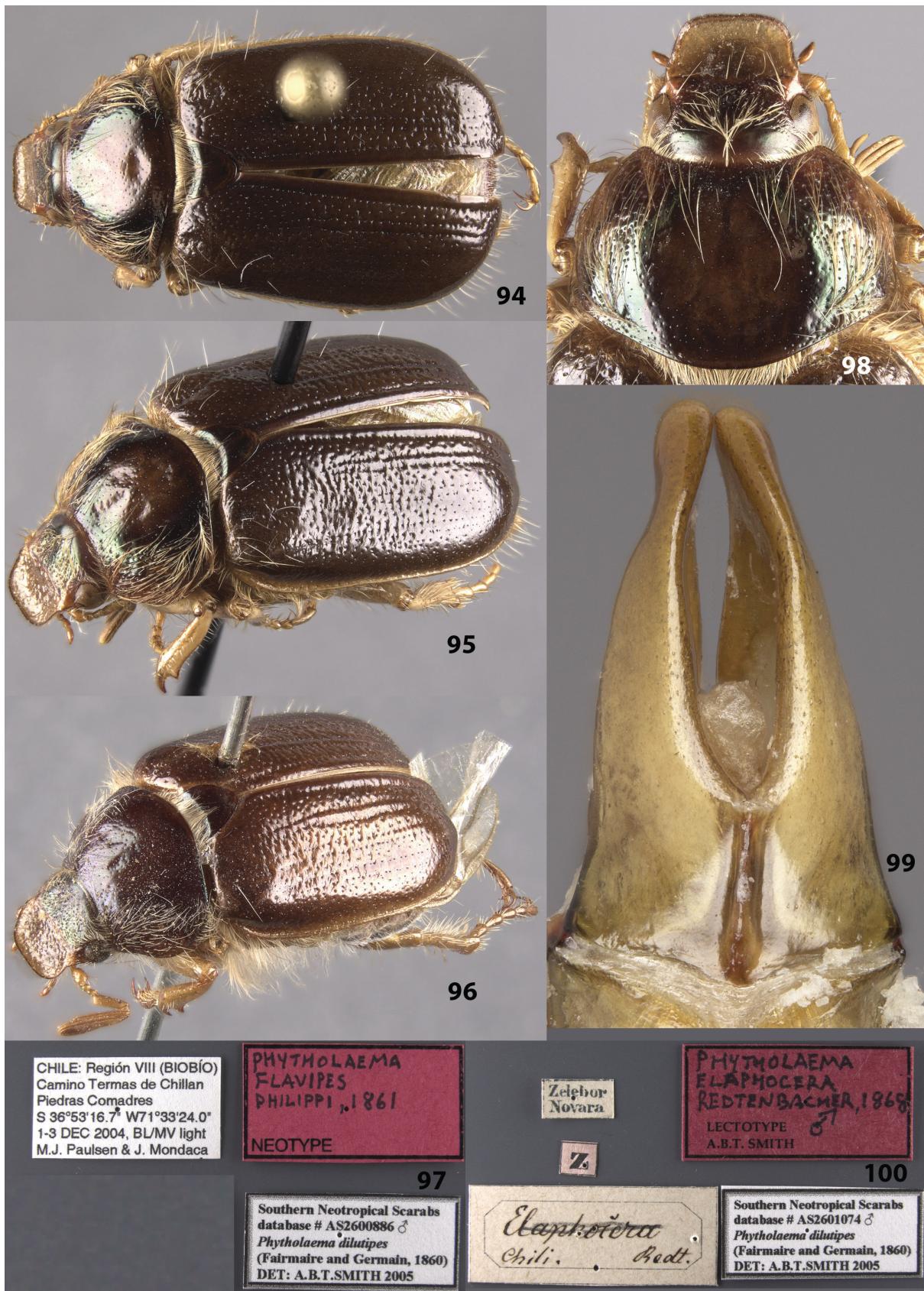
Figs. 94–100, 150.

*Lacris dilutipes* Fairmaire & Germain, 1860: 268. Type locality: “Chillan” (Fairmaire & Germain 1860). Type series: lectotype male designated by Lacroix (2007) at MNHN, not seen.

*Phytholaema flavipes* Philippi, 1861: 735. Type locality: Chile: VIII Région de Biobío: Camino Termas de Chillán, Piedras Comadres (36°53'16.7"S, 71°33'24.0"W); the original type locality was “la cordillera de Linares” (Philippi 1861). Type series: neotype male (Figs. 94–95, 97–98) at MNNC labeled a) “CHILE: Région VIII (BIOBÍO) / Camino Termas de Chillan / Piedras Comadres / S 36°53'16.7" W71°33'24.0" / 1-3 DEC 2004, BL/MV light / M.J. Paulsen & J. Mondaca” (typeset), b) “PHYTHOLAEMA / FLAVIPES / PHILIPPI, 1861 / NEOTYPE” (handwritten and typeset on red paper), c) “Southern Neotropical Scarabs / database # AS2600886 ♂ / *Phytholaema dilutipes* / (Fairmaire and Germain, 1860) / DET: A.B.T.SMITH 2005” (typeset). **Neotype here designated.** See the *Designation of lectotypes and neotypes* section for taxonomic justification.

*Phytholaema elaphocera* Redtenbacher, 1868: 65. Type locality: “Chili.” Type series: lectotype male (Figs. 94, 100) at NHMW labeled a) “Zelebor / Novara” (typeset), b) “Z” (typeset on pink paper), c) “*Elaphoeera* / Chili. Redt.” (handwritten), d) “PHYTHOLAEMA / ELAPHOCERA / REDTENBACHER, 1868 / LECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on red paper), e) “Southern Neotropical Scarabs / database # AS2601074 ♂ / *Phytholaema dilutipes* / (Fairmaire and Germain, 1860) / DET: A.B.T.SMITH 2005” (typeset). **Lectotype here designated.** One male paralectotype at NHMW labeled a) “Zelebor / Novara” (typeset), b) “Z” (typeset on pink paper), c) “PHYTHOLAEMA / ELAPHOCERA / REDTENBACHER, 1868 / PARALECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on yellow paper), d) “Southern Neotropical Scarabs / database # AS2601075 ♂ / *Phytholaema dilutipes* / (Fairmaire and Germain, 1860) / DET: A.B.T.SMITH 2005” (typeset).

*Phytholaema dilutipes* (Fairmaire and Germain); Martínez, 1975: 227.



**FIGURES 94–100.** *Phytholaema dilutipes* male. 94, *Phytholaema flavipes* (junior synonym) neotype dorsal habitus; 95, neotype oblique habitus; 96, *Phytholaema elaphocera* (junior synonym) lectotype oblique habitus; 97, *Phytholaema flavipes* (junior synonym) neotype labels; 98, neotype head and pronotum; 99, parameres; 100, *Phytholaema elaphocera* (junior synonym) lectotype labels.

**Diagnosis.** Length 9–16 mm. Dorsal surface shiny dark brown (tan in teneral specimens) with pale yellow setae. Dorsal color contrasting with light venter and legs. *Head*: dorsal surface with dense, erect setae; typically bicolored with dark brown frons and lighter clypeus. Frons with two lateral depressions separated by a weakly elevated medial ridge. Margin of eye with dense, scale-like setae. *Pronotum*: disc with long, dense setae and strong punctuation laterally and glabrous and weakly punctate medially. Lateral margin with fringe of long setae. *Elytra*: disc with some scattered, long setae at humeral and apical angles. Lateral margin light in color with fringe of long setae. *Venter*: densely setose, color mainly tan with some dark brown on the apical abdominal sternites. *Legs*: color tan. Mesotarsus shorter than mesotibia. Male genitalia: parameres tapered towards apices, apices not hooked, toothed, or curved (Fig. 99).

**Distribution by province** (specific datapoints in Fig. 150). Chile: VII Región del Maule, VIII Región del Biobío, IX Región de la Araucanía.

**Remarks.** All of the collections cited in the *Specimens* section were searched along with numerous other European collections and no trace could be found of the original type material for *Phytholaema flavipes*. Since the bulk of Philippi's collection was deposited in the NMPC and Museum für Naturkunde (Berlin, Germany), we can only conclude that the original type material has been lost. A recently collected specimen with precise label data is designated as the neotype. The original type locality of Cordillera de Linares is somewhat vague but certainly less than 100 km north of the new type locality of Piedras Comadres and within the same faunal and geographical area.

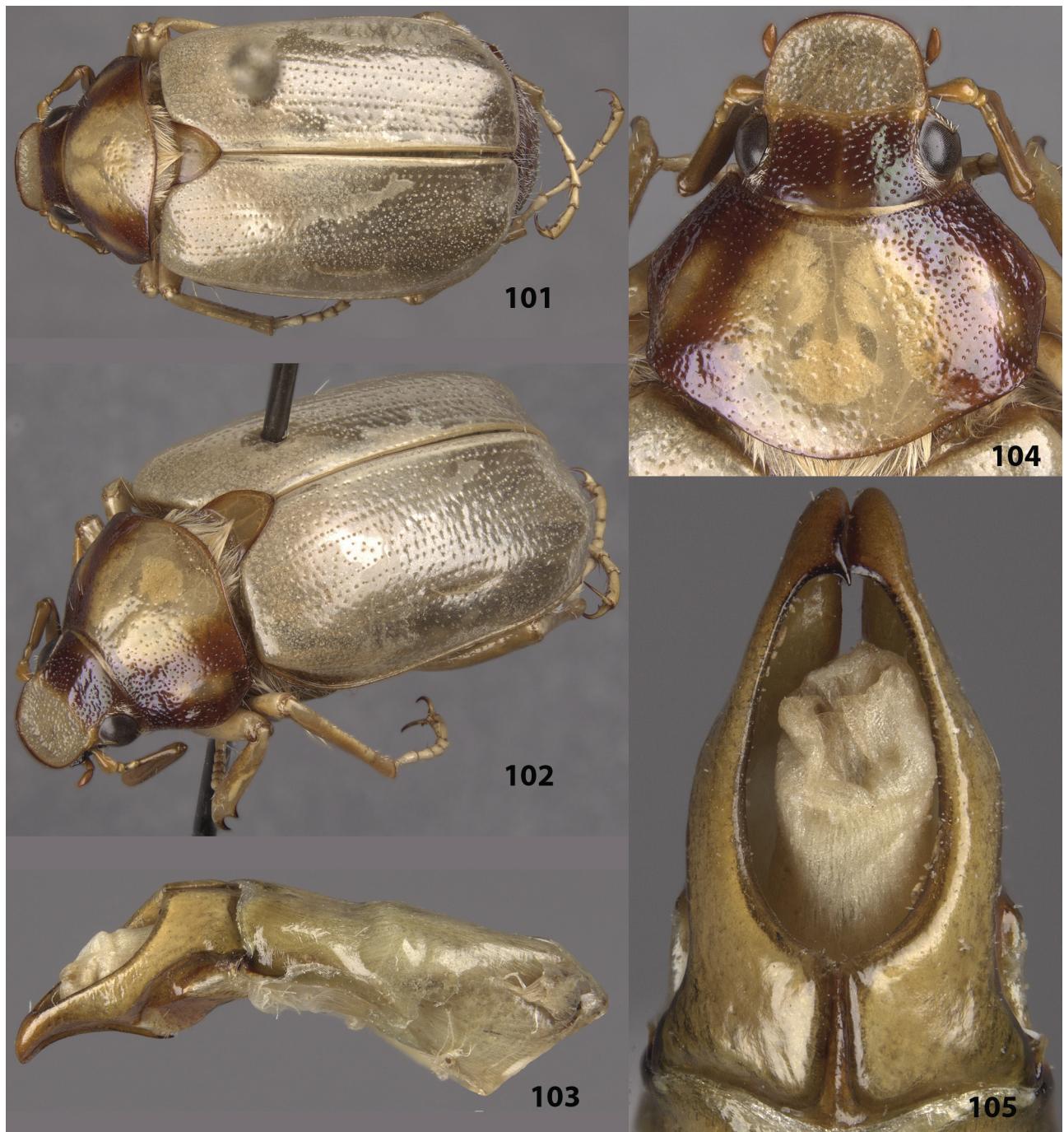
### *Phytholaema fenestra* Smith & Mondaca, new species

Figs. 101–105, 150.

**Type locality.** Chile: VII Región del Maule, Talca, Reserva Nacional Los Ruiles.

**Type series.** Holotype male at MNNC labeled a) “CHILE: VII Región (Maule) / Talca: Res. Nac. Los Ruiles / 3-X-2003 / J. Mondaca E.” (typeset), b) “Southern Neotropical Scarabs / database # AS2604754 / *Phytholaema mutabilis* / (Solier, 1851) ♂ / DET: A.B.T.SMITH 2006” (typeset), c) “PHYTHOLAEMA / FENESTRA / SMITH & MONDACA / HOLOTYPE ♂” (red label, handwritten and typeset). One allotype female at MNNC labeled a) “CHILE: CAUQUENES / Res. Nac. Los Ruiles / 2 October 2003 / S. Rothmann” (typeset), b) “Southern Neotropical Scarabs / database # AS2600642 / *Phytholaema mutabilis* / (Solier, 1851) ♀ / DET: A.B.T.SMITH 2005” (typeset), c) “PHYTHOLAEMA / FENESTRA / SMITH & MONDACA / ALLOTYPE ♀” (red label, handwritten and typeset). One paratype male stored in alcohol at CMNC labeled a) “CHILE: VII Región (Maule) / Talca: Res. Nac. Los Ruiles / 3-X-2003 / J. Mondaca E.” (typeset), b) “Southern Neotropical Scarabs / database # AS2604752 / *Phytholaema mutabilis* / (Solier, 1851) ♂ / DET: A.B.T.SMITH 2006” (typeset and handwritten), c) “UNSM SCARAB DNA / VOUCHER SPECIMEN / AS 407 / DEC/2004” (typeset and handwritten). One paratype male at CMNC labeled a) “CHILE: VII Región (Maule) / Talca: Res. Nac. Los Ruiles / 3-X-2003 / J. Mondaca E.” (typeset), b) “Southern Neotropical Scarabs / database # AS2604753 / *Phytholaema mutabilis* / (Solier, 1851) ♂ / DET: A.B.T.SMITH 2006” (typeset and handwritten). One paratype male stored in alcohol at CMNC labeled a) “CHILE: Región VII (MAULE) / R.N. Los Queules, ~400 m / S 35°59'15.9" W72°41'44.6" / 29-30 NOV 2004, UV/MV light / M.J. Paulsen & J. Mondaca” (typeset), b) “Southern Neotropical Scarabs / database # AS2604583 / *Phytholaema mutabilis* / (Solier, 1851) / DET: A.B.T.SMITH 2006” (typeset), c) “A.B.T.SMITH SCARAB DNA / VOUCHER SPECIMEN / AS562 / JULY 2005” (typeset). One paratype male at JMEC labeled a) “CHILE REG. MAULE / R. N. Los Queules / 2-XI-2013 / col. P. Pinto” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001445” (typeset with barcode). One paratype male at JMEC labeled a) “CHILE REG. MAULE / R. N. Los Queules / 2-XI-2013 / col. P. Pinto” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001446” (typeset with barcode). One paratype female at JMEC labeled a) “CHILE REG. MAULE / R. N. Los Queules / 2-XI-2013 / col. P. Pinto” (typeset), b) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3001447” (typeset with barcode). All paratypes bear a yellow paratype label.

**Description of holotype** (Figs. 101–105). Length 14 mm. Dorsal surface shiny light tan with frons and lateral portions of pronotum with contrasting shiny light brown with metallic green reflections. Darker lateral portion of pronotum with elongate light patch in middle (Figs. 101–102, 104). Setae pale yellow. Dorsal color generally similar to color of venter and legs, except the abdominal sternites are a contrasting brown color. *Head*: dorsal surface with moderate, short, erect setae; bicolored with light brown frons with metallic green reflections and tan



**FIGURES 101–105.** *Phytholaema fenestra* holotype male. 101, dorsal habitus; 102, oblique habitus; 103, lateral genitalia; 104, head and pronotum; 105, parameres.

clypeus. Clypeus rounded with apex strongly reflexed, surface rugopunctate; frons moderately punctate. Margin of eye with dorsolateral patch of dense, thick setae. Mentum rhomboidal with distinct, longitudinal, medial suture. Antennae with 8 antennomeres; club consisting of 4 antennomeres, approximately equal to antennomeres 1–4 in length. Antennomere 4 elongate, approximately equal in length to antennomeres 1–3 combined. *Pronotum*: disc glabrous except for a few scattered setae in dark laterally region; punctuation strong laterally in dark region and moderate medially. Lateral margin without a distinct fringe of long setae. *Elytra*: disc with very few scattered, long setae; with well-defined, punctate striae. Lateral margin slightly darker in color to disc without fringe of long setae. *Venter*: medially glabrous with long setae laterally on sternum and short, thick setae laterally on abdominal sternites. Surface mainly tan with brown abdominal sternites. Mesosternal peg vestigial. *Legs*: color tan. Protibia with two apical teeth on outer margin with remainder of outside edge smooth. Protarsal claws, mesotarsal claws, and metatarsal claws symmetrical, each side with 2 teeth in basal half. Protibial spur present but vestigial.

Mesotarsus shorter than mesotibia. Metatibial spurs absent. *Male genitalia*: parameres enlarged apically, curved basally and parallel at apices; subapically with a basally directed spine (Figs. 103, 105).

**Variation.** Male length 14–15 mm. Male paratypes similar in all aspects to the holotype except some with slightly more setae on the head and pronotum. Female allotype length 15 mm; antennal club consisting of 3 antennomeres, distinctly shorter than stalk in length; antennomere 4 somewhat elongate but shorter than antennomeres 1–3 combined; antennomere 5 partially lamellate but less than half the length of the terminal three antennomeres; metatibia with 2 spurs.

**Etymology.** This species is named for the light areas within the dark lateral regions of the pronotum. *Fenestra* is Latin for window or opening and should be considered a noun in apposition.

**Distribution** (Fig. 150). Chile (8): VII Región del Maule (8): Reserva Nacional Los Queules, Reserva Nacional Los Ruiles.

**Temporal data.** October (4), November (4).

**Remarks.** In addition to the morphological characters, this new species is supported by a DNA barcoding analysis of three of the four species of *Phytholaema* (see Fig. 106). The approximate 10% divergence of CO1 data observed between *Phytholaema fenestra* and both *P. dilutipes* and *P. mutabilis* is a strong indicator that the *P. fenestra* barcode cluster represents a distinct species (using the criteria outlined in Ratnasingham & Hebert (2013)).

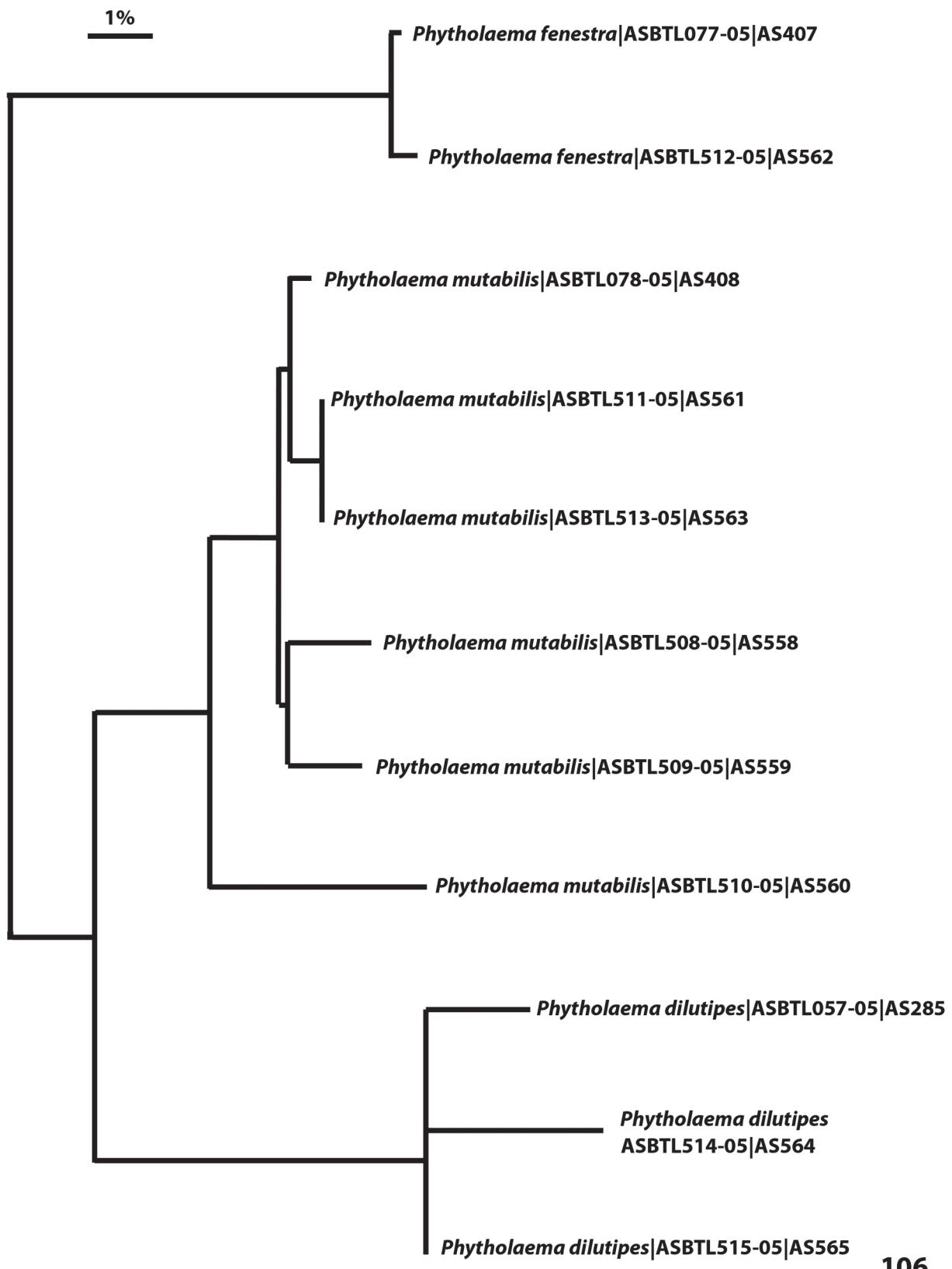
### *Phytholaema herrmanni* Germain, 1901

Figs. 107–112, 150.

*Phytholaema herrmanni* Germain, 1901: 10. Type locality: “Araucanía setentrional.” Type series: lectotype male (Figs. 107–110) at MNNC labeled a) “188” (handwritten in red ink), b) “Herrmann” (handwritten), c) “Phytolaema / Herrmann / P. G.” (handwritten), d) “SINTIPO” (typeset), e) “CHILE / M. N. / H. N. / Tipo / No / 2915” (typeset and handwritten), f) “PHYTHOLAEMA / HERRMANNI / GERMAIN, 1901 / LECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on red paper), g) “Southern Neotropical Scarabs / database # AS2600743 / *Phytholaema herrmanni* / Germain, 1901 ♂ / DET: A.B.T.SMITH 2005” (typeset). **Lectotype here designated.** One male paralectotype at MNNC labeled a) “♂” (typeset), b) “Colección / P. Germain” (typeset), c) “PHYTOLAEMA / HERRMANNI / GERMAIN / DET. / A. CAMOUSSEIGHT” (handwritten), d) “CHILE / M. N. / H. N. / Tipo / No / 2914” (typeset and handwritten), e) “PHYTHOLAEMA / HERRMANNI / GERMAIN, 1901 / PARALECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on yellow paper), f) “Southern Neotropical Scarabs / database # AS2600738 / *Phytholaema herrmanni* / Germain, 1901 ♂ / DET: A.B.T.SMITH 2005” (typeset). One male paralectotype at MNNC labeled a) “881 / a” (handwritten in red ink), b) “Colección / P. Germain” (typeset), c) “♂” (typeset), d) “SINTIPO” (typeset), e) “PHYTOLAEMA / HERRMANNI / GERMAIN / DET. / A. CAMOUSSEIGHT” (handwritten), f) “CHILE / M. N. / H. N. / Tipo / No / 2911” (typeset and handwritten), g) “PHYTHOLAEMA / HERRMANNI / GERMAIN, 1901 / PARALECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on yellow paper), h) “Southern Neotropical Scarabs / database # AS2600739 / *Phytholaema herrmanni* / Germain, 1901 ♂ / DET: A.B.T.SMITH 2005” (typeset). One male paralectotype at MNNC labeled a) “881 / Herrmanni / P. G. (ined.)” (handwritten), b) “♂” (typeset), c) “SINTIPO” (typeset), d) “Colección / P. Germain” (typeset), e) “PHYTOLAEMA / HERRMANNI / GERMAIN / DET. / A. CAMOUSSEIGHT” (handwritten), f) “CHILE / M. N. / H. N. / Tipo / No / 2912” (typeset and handwritten), g) “PHYTHOLAEMA / HERRMANNI / GERMAIN, 1901 / PARALECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on yellow paper), h) “Southern Neotropical Scarabs / database # AS2600740 / *Phytholaema herrmanni* / Germain, 1901 ♂ / DET: A.B.T.SMITH 2005” (typeset). One male paralectotype at MNNC labeled a) “♂” (typeset), b) “SINTIPO” (typeset), c) “Colección / P. Germain” (typeset), d) “PHYTOLAEMA / HERRMANNI / GERMAIN / DET. / A. CAMOUSSEIGHT” (handwritten), e) “CHILE / M. N. / H. N. / Tipo / No / 2913” (typeset and handwritten), f) “PHYTHOLAEMA / HERRMANNI / GERMAIN, 1901 / PARALECTOTYPE ♂ / A.B.T. SMITH” (handwritten and typeset on yellow paper), g) “Southern Neotropical Scarabs / database # AS2600836 / *Phytholaema herrmanni* / Germain, 1901 / DET: A.B.T.SMITH 2005” (typeset).

*Phytholaema pallida* Saylor, 1937: 10. **New synonymy.** Type locality: “Southern Chile.” Type series: holotype male at USNM, not examined. One male paratype at USNM labeled a) “Southern / Chili” (typeset), b) “MJRivera / Collector” (typeset), c) “Type No. / U.S.N.M. / Phytholaema / pallida” (typeset and handwritten on red paper), d) “AllotypeNo. / 54131 / U.S.N.M.” (typeset and handwritten on red paper), e) “Phytholaema / hermanni / pallida / Saylor” (handwritten in pencil), f) “PHYTHOLAEMA / HERRMANNI / PALLIDA / SAYLOR, 1937 / PARATYPE ♂” (handwritten and typeset on yellow paper), g) “Southern Neotropical Scarabs / database # AS2600803 / *Phytholaema herrmanni* / Germain, 1901 ♂ / DET: A.B.T.SMITH 2005” (typeset).

*Phytholaema peccans* Blackwelder, 1944: 221. **New synonymy.** Type locality: “Southern Chile.” Type series: same as *Phytholaema herrmanni pallida* Saylor above. Blackwelder (1944) erected this replacement name for *Phytholaema pallida* Porter, 1939. However, Blackwelder was erroneous when he determined that the Porter name was available as Porter (1939) was actually discussing the taxon described by Saylor (1937).



**FIGURE 106.** *Phytholaema* cytochrome c oxidase 1 (CO1) barcode analysis results. The distance model used is Kimura 2 parameter with a neighbor-joining tree building method in BOLD (<http://www.boldsystems.org>). The Process ID numbers to access the sequences and data in BOLD are as follows (using a search of “public data”): *Phytholaema dilutipes* (ASBTL057-05, ASBTL514-05, ASBTL515-05), *Phytholaema fenestra* (ASBTL077-05, ASBTL512-05), *Phytholaema mutabilis* (ASBTL078-05, ASBTL508-05, ASBTL509-05, ASBTL510-05, ASBTL511-05, ASBTL513-05).



**FIGURES 107–112.** *Phytholaema herrmanni* male. 107, lectotype dorsal habitus; 108, lectotype oblique habitus; 109, lectotype labels; 110, lectotype head and pronotum; 111, parameres; 112, *Phytholaema pallida* paratype oblique habitus.

**Diagnosis.** Length 10–14 mm. Dorsal surface shiny light brown (tan in teneral specimens) with pale yellow setae. Dorsal color generally similar to color of venter and legs. *Head*: dorsal surface with dense, erect setae; typically bicolored with dark brown frons and lighter clypeus. Frons without distinct lateral depressions or a weakly elevated medial ridge. Margin of eye with dense, thick setae. *Pronotum*: disc with long, dense setae; punctuation strong laterally and moderate medially. Lateral margin without a distinct fringe of long setae. *Elytra*: disc with some scattered, long setae at humeral and apical angles. Lateral margin identical in color to disc with fringe of long setae. *Venter*: densely setose, color mainly tan with some dark brown on the abdominal sternites. *Legs*: color tan. Mesotarsus longer than mesotibia. Male genitalia: parameres enlarged apically, curved basally and parallel towards apices; subapically with a fine, basally directed spine (Fig. 111).

**Distribution by province** (specific datapoints in Fig. 150). Chile: VII Región del Maule (Gutiérrez 1944 but not verified with specimens). VIII Región del Biobío, IX Región de la Araucanía, XIV Región de Los Ríos, X Región de Los Lagos.

**Remarks.** The name *Phytholaema herrmanni pallida* Saylor, 1937 was erected for a small series of pale, small *Phytholaema herrmanni* with reduced basal tooth on tarsal claws. The locality given for the type series was vague “southern Chile” but in examining 287 specimens it is clear that smaller, paler specimens can occur in populations across the range of this species, thus there is no justification for two subspecies with allopatric geographical distributions. Therefore, the name *Phytholaema pallida* and the erroneous replacement name *Phytholaema peccans* are both here placed in synonymy with *Phytholaema herrmanni*.

### *Phytholaema mutabilis* (Solier, 1851)

Figs. 113–117, 150.

*Areoda mutabilis* Solier, 1851: 93. Type locality: Chile, IX Región de la Araucanía, Parque Nacional Nahuelbuta, Coimallín (37°48.226'S, 73°00.963'W); the original type locality was “Valdivia” (Solier 1851). Type series: neotype male (Figs. 113–116) at MNNC labeled a) “CHILE: Región IX (ARAUCANÍA) / P.N. Nahuelbuta; Coimallín / S 37°48.226' W 73°00.963' / 5-7 DEC 2004; 1230 m / M.J. Paulsen & J. Mondaca” (typeset), b) “AREODA / MUTABILIS / SOLIER, 1851 ♂ / NEOTYPE” (handwritten and typeset on red paper), c) “Southern Neotropical Scarabs / database # AS2600375 / *Phytholaema mutabilis* / (Solier, 1851) ♂ / DET: A.B.T.SMITH 2005” (typeset). **Neotype here designated.**

*Phytholaema mutabilis* (Solier); Blanchard, 1851: 219.

**Diagnosis.** Length 11–16 mm. Dorsal surface shiny light tan with frons and lateral portions of pronotum with contrasting shiny dark brown with metallic green reflections. When alive, the elytra are a bright shiny golden-yellow color which turns to light tan in dead specimens. Setae pale yellow. Dorsal color generally lighter than color of venter and legs. *Head*: dorsal surface with dense, erect setae; typically bicolored with dark brown frons with metallic green reflections and lighter clypeus. Frons without distinct lateral depressions or a weakly elevated medial ridge. Margin of eye with dense, thick setae. *Pronotum*: disc with long, dense setae and strong punctuation laterally and glabrous and weakly punctate medially. Lateral margin without a distinct fringe of long setae. *Elytra*: disc with a few scattered, long setae at humeral and apical angles. Lateral margin identical in color to disc with fringe of long setae. *Venter*: densely setose except almost glabrous medially on metasternum, color mainly dark tan on sternum and light brown on abdominal sternites. *Legs*: color generally dark tan dorsally and tan ventrally. Mesotarsus shorter than mesotibia. Male genitalia: parameres flattened and blade-like; apically bifurcating into a ventral, fine, apically directed spine and a dorsal lobe (Fig. 117).

**Distribution by province** (specific datapoints in Fig. 150). Argentina: Neuquén, Río Negro, Chubut; Chile: VI Región del General Libertador Bernardo O’Higgins, VII Región del Maule, VIII Región del Biobío, IX Región de la Araucanía, XIV Región de Los Ríos, X Región de Los Lagos.

**Remarks.** All of the collections cited in the *Specimens* section were searched along with numerous other European collections and no trace could be found of the original type material for *Phytholaema mutabilis*. Since all of the Solier material was deposited in the MNHN, we conclude that the original type material has been lost. A recently collected specimen with precise label data is designated as the neotype. The original type locality of “Valdivia” is somewhat vague and likely to be incorrect based on the questionable reliability of other localities in Solier (1851). We opted to select a recently collected specimen with precise locality data. The new type locality of Coimallín, Parque Nacional Nahuelbuta is roughly in the middle of the range for this widespread species.



FIGURES 113–117. *Phytholaema mutabilis* male. 113, neotype dorsal habitus; 114, neotype oblique habitus; 115, neotype labels; 116, neotype head and pronotum; 117, parameres.

### Genus *Plectris* LePeletier & Serville, 1828

*Plectris* LePeletier & Serville, 1828: 369. Type species: *Plectris tomentosa* LePeletier & Serville, 1828, by monotypy. *Pseudoserica* Guérin-Méneville, 1838: 86. Type species: *Serica marmorea* Guérin-Méneville, 1831, by monotypy. *Euryaspis* Blanchard, 1851: 130. Type species: *Euryaspis gaudichaudii* Blanchard, 1851, by monotypy. *Trichoderma* Nonfried, 1894: 11 (not *Trichoderma* Fleming, 1822, *Trichoderma* Stephens, 1835, or *Trichoderma* Swainson, 1839). Type species: *Trichoderma ceylanica* Nonfried, 1894, by monotypy. *Junkia* von Dalla Torre, 1913: 310. Type species: *Trichoderma ceylanica* Nonfried, 1894, by monotypy. Replacement name for the junior homonym *Trichoderma* Nonfried, 1894.

**Diagnosis.** Length 9–12 mm. Dorsal surface brown, covered in thick setae. *Head*: clypeus four times wider than long, sinuate, reflexed. Mentum as long as wide; apex bilobed; surface with setose medial pit. Antennae with 9 antennomeres. Antennal club consisting of 3 antennomeres, club shorter than funicle and scape in length. *Pronotum*: widest medially, length greater than width. *Venter*: mesosternal peg absent. *Legs*: protibia with three apical teeth on outer margin with remainder of outside edge smooth. Claws symmetrical, each side apically cleft. Protibial spur present, greatly reduced. Males and females have 2 metatibial spurs.

**Composition.** There are 361 species in this genus that occur from the West Indies and Central America to southern South America. Two species have been recorded from southern South America and one is endemic to the region.

#### Key to southern South American species of *Plectris*

1. Clypeus with apex sinuate (Fig. 120). Length less than 11 mm. IV Región de Coquimbo, Chile . . . . . *Plectris talinay* Mondaca
- Clypeus with apex broadly parabolic, not sinuate. Length greater than 11 mm. Neuquén, Argentina. . . *Plectris blanchardi* Frey

#### *Plectris blanchardi* Frey, 1967

*Plectris blanchardi* Frey, 1967a: 86 (replacement name for *Plectris argentina* Moser 1926). Type locality. “Argentina: San Ignacio.” Type series: Not examined.

*Plectris argentina* Moser 1926: 206 (secondary junior homonym of *Plectris argentina* [Bruch, 1909]). Type locality. “Argentina: San Ignacio.”

**Diagnosis.** The characters used in the key and geographic distribution will diagnose this species from *P. talinay*.

**Distribution.** Argentina: Neuquén (Moser 1926).

**Remarks.** No specimens of this species were examined. The characters used in the key were extracted from Moser (1926) and Frey (1967).

#### *Plectris talinay* Mondaca, 2010

Figs. 118–120.

*Plectris talinay* Mondaca, 2010: 54. Type locality: “Chile, Región de Coquimbo, Provincia de Limari, Parque Nacional Fray Jorge, Quebrada Las Vacas.” Type series: see Mondaca (2010) for details.

**Diagnosis.** The characters used in the key and geographic distribution will diagnose this species from *P. blanchardi*. Male club approximately equal to funicle and scape in length; female club distinctly shorter than funicle in length.

**Distribution.** Chile: IV Región de Coquimbo (Mondaca 2010).

#### Genus *Pristerophora* Harold, 1869

*Pristerophora* Harold, 1869b: 123. Type species: *Prionophora picipennis* Solier, 1851, by monotypy. Replacement name for the junior homonym *Prionophora* Solier, 1851: 101.

*Prionophora* Solier, 1851: 101 (not *Prionophora* Westwood, 1848). Type species: *Prionophora picipennis* Solier, 1851, by monotypy.

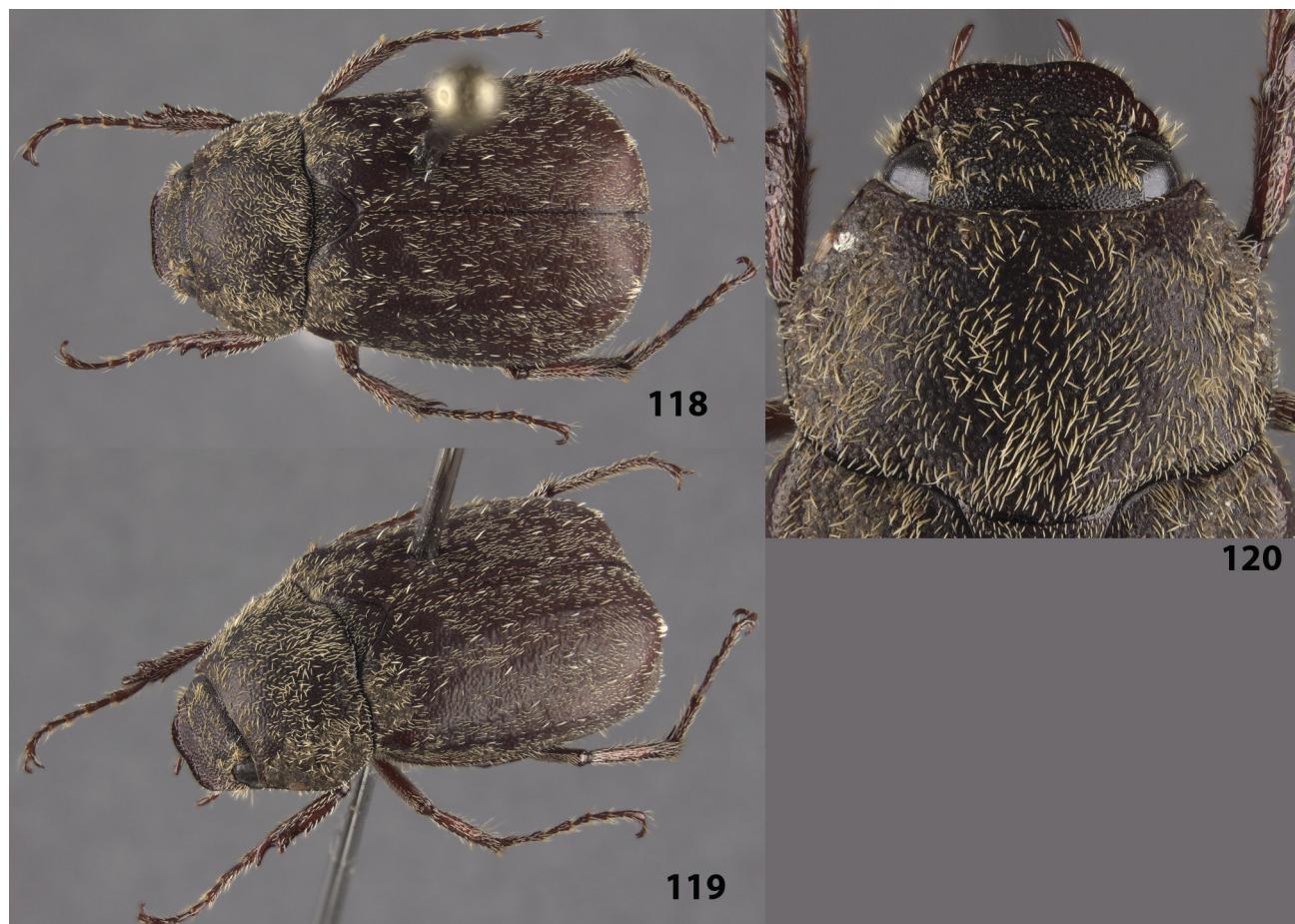
*Astaenosiagum* Martínez, 1957: 50. Type species: *Schizochelus longipes* Philippi, 1861 by original designation.

**Diagnosis.** Length 5.5–11.0 mm. Dorsal surface unicolored or bicolored with dark and light brown patchy appearance, with even setal pattern (sometimes with some minor uneven patterning on elytra). *Head*: clypeus rounded or sinuate, apex strongly reflexed. Mentum longer than wide, with medial trough. Antennae with 9 antennomeres, male club approximately equal or greater than antennomeres 1–6 in length, female club shorter than

antennomeres 1–6 in length. *Pronotum*: widest medially, width greater than length. *Legs*: protibia with two large, apical teeth on outer margin; medially and basally with series of small teeth. Claws symmetrical, each side cleft apically. Protibial spurs present or absent. Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres broadly rounded, distinctly separated medially.

**Composition.** There are three species in this genus and all are endemic to southern South America.

**Remarks.** This genus was revised by Smith (2008).



**FIGURES 118–120.** *Plectris talinay* paratype male. 118, dorsal habitus; 119, oblique habitus; 120, head and pronotum.

#### Key to species of *Pristerophora*

Males have metatibial spurs absent and elongate antennal clubs approximately equal in length to remaining basal antennomeres. Females have two metatibial spurs and short antennal clubs that are significantly shorter than remaining basal antennomeres.

1. Protibial spur present. Total length usually greater than 7 mm. Elytra color and setae even, not generally mottled or patchy (Figs. 121–124) ..... 2
- Protibial spur absent. Total length less than 7 mm. Elytra color and setae uneven, often giving a mottled or patchy appearance (Figs. 125–126) ..... *Pristerophora picipennis* (Philippi)
2. Total length greater than 9.5 mm. Male with bulbous eyes separated by 1–2 eye-widths (Fig. 121) ..... *Pristerophora longipes* (Philippi)
- Total length less than 9.5 mm. Male with eyes not enlarged, separated by 4 eye-widths (Fig. 123) ..... *Pristerophora paulseni* Smith



**FIGURES 121–126.** *Pristerophora*. 121, *Pristerophora longipes* lectotype dorsal habitus; 122, *Pristerophora longipes* lectotype oblique habitus; 123, *Pristerophora paulseni* holotype dorsal habitus; 124, *Pristerophora paulseni* holotype oblique habitus; 125, *Pristerophora picipennis* lectotype dorsal habitus; 126, *Pristerophora picipennis* lectotype oblique habitus.

***Pristerophora longipes* (Philippi, 1861)**

Figs. 121–122, 151.

*Schizochelus longipes* Philippi, 1861: 738. Type locality: “Valdivia.” Type series: see Smith (2008) for details.

*Schizochelus ursulus* Philippi, 1864: 446. Type locality: “Valdivia.” Type series: see Smith (2008) for details.

*Astaenosiagum longipes* (Philippi); Martínez, 1957: 51.

*Pristerophora longipes* (Philippi); Smith, 2008: 14.

**Diagnosis.** Length 9.5–11.0 mm. *Head*: clypeus apex sinuate. Eyes bulbous. *Legs*: protibia with two apical teeth on outer margin, remainder of protibial margin with approximately 4–5 smaller teeth in a saw-tooth configuration. Protibial spur present.

**Distribution by province** (specific datapoints in Fig. 151). Chile: VIII Región del Biobío, IX Región de la Araucanía, XIV Región de Los Ríos, X Región de Los Lagos, XI Región de Aisén.

***Pristerophora paulseni* Smith, 2008**

Figs. 123–124, 151.

*Pristerophora paulseni* Smith, 2008: 14. Type locality: “Chile: X Región de Los Lagos: Parque Nacional Vincente Pérez Rosales: Volcán Osorno: 41°08.496' S, 72°32.096' W.” Type series: see Smith (2008) for details.

**Diagnosis.** Length 6.0–9.5 mm. *Head*: clypeus apex weakly sinuate. Eyes not bulbous. *Legs*: protibia with two apical teeth on outer margin, remainder of protibial margin with approximately 8 smaller teeth in a saw-tooth configuration. Protibial spur present.

**Distribution by province** (specific datapoints in Fig. 151). Argentina: Neuquén, Río Negro; Chile: VIII Región del Biobío, IX Región de la Araucanía, X Región de Los Lagos, XI Región de Aisén.

***Pristerophora picipennis* (Solier, 1851)**

Figs. 125–126, 151.

*Prionophora picipennis* Solier, 1851: 102. Type locality: “la provincia de Coquimbo.” Type series: see Smith (2008) for details.

*Schizochelus breviventris* Philippi, 1864: 445. Type locality: “Chile.” Type series: see Smith (2008) for details.

*Schizochelus serratus* Philippi, 1864: 444. Type locality: “Chile.” Type series: see Smith (2008) for details.

*Pristerophora picipennis* (Solier); Harold, 1869a: 1149.

**Diagnosis.** Length 5.5–7.0 mm. *Head*: clypeus apex rounded. Eyes not bulbous. *Legs*: protibia with two apical teeth on outer margin, remainder of protibial margin with more than 8 smaller teeth in a saw-tooth configuration. Protibial spur absent.

**Distribution by province** (specific datapoints in Fig. 151). Argentina: Neuquén, Río Negro, Chubut; Chile: VII Región del Maule, VIII Región del Biobío, IX Región de la Araucanía, XIV Región de Los Ríos, X Región de Los Lagos, XI Región de Aisén.

**Genus *Pseudodicrania* Gutiérrez, 1950**

*Pseudodicrania* Gutiérrez, 1950: 275. Type species: *Dicrania aeneobrunnea* Philippi, 1861, by original designation.

**Diagnosis.** Length 19–22 mm. Dorsal surface shiny brown, head and pronotum with metallic green reflections (sometimes weak). Head with long, erect setae; pronotum with long setae (sometimes abraded), elytra glabrous. *Head*: clypeus parabolic with apex weakly reflexed. Mentum with width greater than length; apex triangular; surface flat, without medial groove or pit. Antennae with 9 antennomeres. Male club consisting of 3 antennomeres, slightly shorter than funicle and scape in length; female club consisting of 3 antennomeres, distinctly shorter than funicle in length. *Pronotum*: widest medially, width greater than length. *Venter*: mesosternal peg a nub, not extending apically. *Legs*: protibia with two apical teeth on outer margin with remainder of outside edge smooth. Claws symmetrical, each side with distinct, sub-basal tooth. Protibial spur present. Metatibial spurs absent in males, females have 2 metatibial spurs. *Male genitalia*: parameres symmetrical, simple, thick (Figs. 129, 132).

**Composition.** This genus is monotypic and endemic to southern South America.

**Remarks.** This genus is distinguished from similar large-bodied genera based on the following characters: clypeus broadly parabolic (narrow and elongate in *Issacaris*, quadrate in *Neuquenodactylus*), frons as wide as clypeal base (distinctly narrower in *Issacaris*), male antennal club not greatly elongate and broad compared to funicle and scape (significantly more elongate and broad in *Issacaris*, significantly more elongate in *Neuquenodactylus*), mentum with width greater than length (length approximately equal to width in *Insimuloissacaris*, length greater than width in *Issacaris*), mentum with apex triangular (elongate and reflexed in

*Issacaris*), mentum surface weakly concave with medial groove (weakly concave with medial groove in *Insimuloissacaris*, with weak suture in *Issacaris*), protibial spur present (absent in *Insimuloissacaris* and *Neuquenodactylus*), claws with strong subapical tooth and small sub-basal tooth (medial tooth in *Neuquenodactylus*), mesosternal peg present but not protruding apically (absent in *Issacaris*), parameres short and thick (thin and elongate in *Insimuloissacaris* and *Neuquenodactylus*), parameres slightly curved (bent at right angle in apical half in *Issacaris*).

### ***Pseudodicrania aeneobrunnea* (Philippi, 1861)**

Figs. 127–133, 152.

*Dicrania aeneobrunnea* Philippi, 1861: 738. Type locality: “Valdivia.” Type series: lectotype male (Figs. 127–128, 130–131, 133) at NMPC labeled a) “COLL.NICKERL / MUS.PRAGENSE” (typeset), b) “Dicrania / aeneo-bruea / Phil. typ. Chili” (handwritten on green label), c) “DICRANIA / AENEOPRUNNEA / PHILIPPI ♂ / LECTOTYPE / A.B.T. SMITH” (red label, handwritten and typeset), d) “Southern Neotropical Scarabs / database # AS2616197 / *Pseudodicrania aeneobrunnea* / (Philippi, 1861) ♂ / DET: A.B.T.SMITH 2008” (typeset). **Lectotype here designated.** One male paralectotype at NMPC labeled a) “COLL.NICKERL / MUS.PRAGENSE” (typeset), b) “Dicrania / brunea-aene / a. Germain Chili” (handwritten on green label), c) “DICRANIA / AENEOPRUNNEA / PHILIPPI ♂ / PARALECTOTYPE / A.B.T. SMITH” (yellow label, handwritten and typeset), d) “Southern Neotropical Scarabs / database # AS2616198 / *Pseudodicrania aeneobrunnea* / (Philippi, 1861) ♂ / DET: A.B.T.SMITH 2008” (typeset).

*Pseudodicrania aeneobrunnea* (Philippi); Gutiérrez, 1950: 276.

**Diagnosis.** See generic diagnosis.

**Distribution by province** (specific datapoints in Fig. 152). Argentina: Neuquén; Chile: VIII Región del Biobío, XIV Región de Los Ríos, X Región de Los Lagos.

### **Genus *Ptyophis* Redtenbacher, 1868**

*Ptyophis* Redtenbacher, 1868: 69. Type species: *Ptyophis macrophylla* Redtenbacher, 1868, by monotypy.

*Tetraphyllus* Philippi, 1864: 448 (not *Tetraphyllus* Laporte & Brullé, 1831). Type species: *Tetraphyllus paulseni* Philippi, 1864, by monotypy.

**Diagnosis.** Length 9.0–13.0 mm. Dorsal surface unicolored with even setal pattern. *Head*: clypeus rectangular or weakly sinuate, apex strongly reflexed. Mentum longer than wide, with weak medial depression. Antennae with 9 antennomeres; male club with 3–5 antennomeres, much greater than antennomeres 1–6 in length; female club shorter than antennomeres 1–6 in length. *Pronotum*: widest medially, width greater than length. *Legs*: protibia with two large, apical teeth on outer margin; medially and basally with series of small teeth. Claws symmetrical, each side cleft apically. Protibial spurs present. Males and females each have 2 metatibial spurs. *Male genitalia*: parameres broad, enveloping a sclerotized dorsal aedeagal process.

**Composition.** There are two species in this genus and both are endemic to southern South America.

**Remarks.** This genus was revised by Mondaca & Ocampo (2012).

### **Key to species of *Ptyophis***

1. Clypeus semicircular, strongly reflexed. Antennal club with 3 antennomeres in both males and females. Color light brown . . . . . *Ptyophis eiderae* Mondaca & Ocampo
- Clypeus weakly quadrate, reflexed. Antennal club with 4–5 antennomeres in most, 3 antennomeres in some males and all females. Color light brown to dark brown . . . . . *Ptyophis paulseni* (Philippi)



**FIGURES 127–133.** *Pseudodicrania aeneobrunnea* male. 127, lectotype dorsal habitus; 128, lectotype oblique habitus; 129, lateral genitalia; 130, lectotype labels; 131, lectotype head and pronotum; 132, parameres; 133, lectotype ventral habitus.



**FIGURES 134–136.** *Ptyophis eiderae* paratype male. 134, dorsal habitus; 135, oblique habitus; 136, head and pronotum.

***Ptyophis eiderae* Mondaca & Ocampo, 2012**

Figs. 134–136, 152.

*Ptyophis eiderae* Mondaca & Ocampo, 2012: 54. Type locality: “CHILE CHOAPA / Los Vilos.” Type series: see Mondaca & Ocampo (2012) for details.

**Diagnosis.** Length 9.0–10.0 mm. *Head*: Clypeus semicircular or broadly semicircular. Frons convex on basal half. Labrum flattened, rounded. Labium pyriform. Antennal club with 3 antennomeres of similar length. *Elytra*: Surface weakly striate, striae of same color as the rest of the integument. *Legs*: Protarsus 1.5 times longer than protibiae in the male. *Male genitalia*: Parameres weakly curved at apex in lateral view.

**Distribution by province** (specific datapoints in Fig. 152). Chile: IV Región de Coquimbo.

***Ptyophis paulseni* (Philippi, 1864)**

Figs. 137–139, 152.

*Tetraphyllus paulseni* Philippi, 1864: 448. Type locality. “Chile, Santiago, Cerro Manquehue” (based on the neotype). The original type locality was “cordillera de Santiago.” Type series: see Mondaca & Ocampo (2012) for details.

*Ptyophis macrophylla* Redtenbacher, 1868: 70. Type locality. “Zwei Männchen aus Chili.” Type series: lectotype male at NHMW labeled a) “Z” (typeset), b) “Novara / 1857-59. / Reise” (typeset), c) “Ptyophis / macrophylla / Typ. Redt.” (handwritten), d) “TYPUS” (typeset on red paper), e) “Macrophylla / Chili. / Redt.” (handwritten), f) “SCARABS OF / SOUTHERN / SOUTH AMERICA / SSSA3000081” (typeset with barcode), g) “PTYOPHIS / MACROPHYLLA / REDTENBACHER, 1868 / MONDACA & OCAMPO (2012) / LECTOTYPE” (handwritten and typeset on red paper), h) “PTYOPHIS / PAULSENI / (PHILIPPI, 1864) / Det: A.B.T.Smith” (handwritten and typeset). Lectotype designated by Mondaca & Ocampo (2012).

*Ptyophis paulseni* (Philippi); Gutiérrez, 1950: 276.

**Diagnosis.** Length 10.0–13.0 mm. *Head*: Clypeus weakly quadrate or broadly semicircular. Frons flat on basal half. Labrum flattened, subrectangular. Labium ellipsoidal or subovate. Antennal club with 3–5 antennomeres,

basal antennomere shorter than apical antennomeres. *Elytra*: Surface striate, striae often appear lighter than the rest of the integument. *Legs*: Protarsus 1.9 times longer than protibiae in the male. *Male genitalia*: Parameres strongly curved at apex in lateral view.

**Distribution by province** (specific datapoints in Fig. 152). Chile: Región Metropolitana de Santiago, VIII Región del Biobío (Mondaca & Ocampo 2012).



**FIGURES 137–139.** *Ptyophis paulseni* male. 134, dorsal habitus; 135, oblique habitus; 136, head and pronotum.

### Genus *Pusiodactylus* Smith, 2008

*Pusiodactylus* Smith, 2008: 18. Type species: *Pusiodactylus mondacai* Smith, 2008 by original designation.

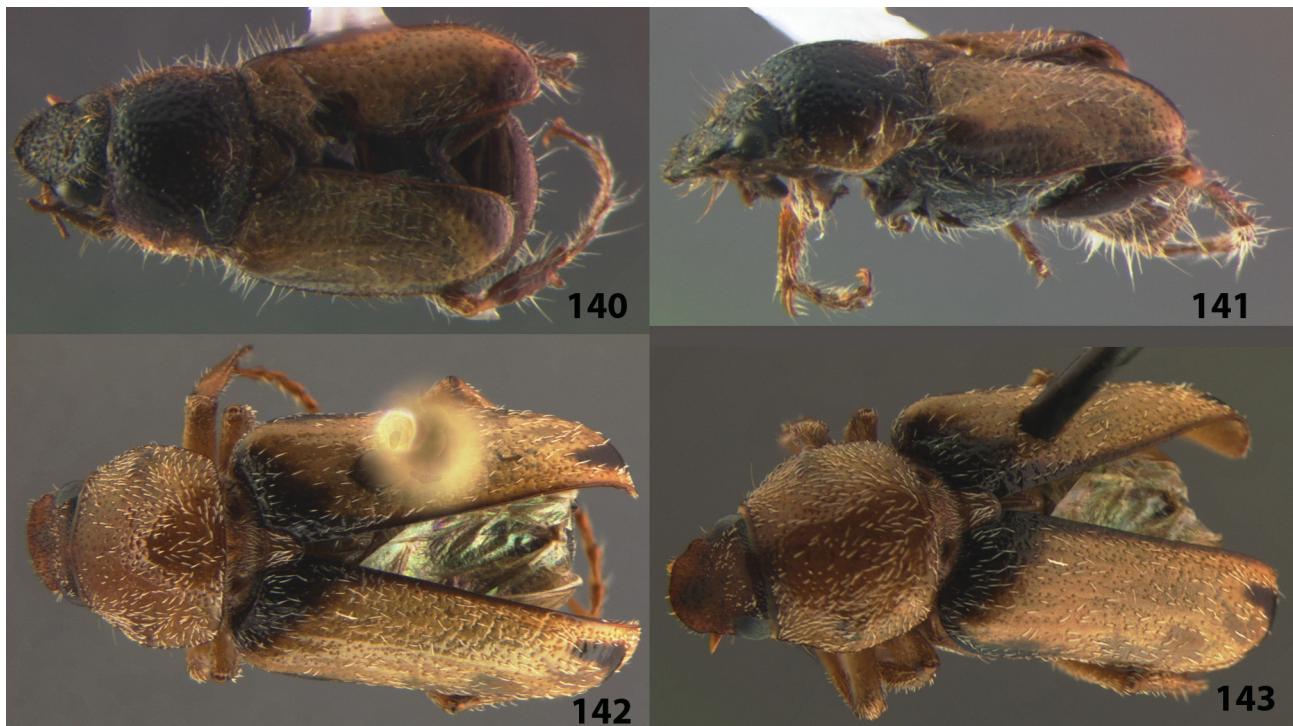
**Diagnosis.** Dorsal surface bicolored with even setal pattern. *Head*: mentum approximately 4x longer than wide, with weak longitudinal trough in *P. mondacai*. *Pronotum*: widest medially, width approximately equal to length. *Legs*: protibia with 2 apical teeth on outer margin, without series of small teeth medially and basally. Claws symmetrical, each side split apically. Protibial spurs absent. Metatibial spurs absent in males, females have 1–2 metatibial spurs (1 in *P. flavigennis* and 2 in *P. mondacai*).

**Composition.** The two species in this genus are both endemic to southern South America.

**Remarks.** This genus was revised by Smith (2008).

### Key to species of *Pusiodactylus*

1. Dorsal setae thick, recumbent (Figs. 142–143). Scutellum width 1/6<sup>th</sup> that of total body width. Metatarsomere 1 slightly longer than metatarsomere 2. Total length greater than 5 mm. .... *Pusiodactylus mondacai* Smith
- Dorsal setae thin, erect (Figs. 140–141). Scutellum width 1/3<sup>rd</sup> that of total body width. Metatarsomere 1 twice as long as metatarsomere 2. Total length less than 5 mm. .... *Pusiodactylus flavigennis* (Philippi)



**FIGURES 140–143.** *Pusiodactylus*. 140, *Pusiodactylus flavipennis* holotype dorsal habitus; 141, *Pusiodactylus flavipennis* holotype oblique habitus; 142, *Pusiodactylus mondacai* holotype dorsal habitus; 143, *Pusiodactylus mondacai* holotype oblique habitus.

***Pusiodactylus flavipennis* (Philippi, 1864)**

Figs. 140–141, 153.

*Prionophora flavipennis* Philippi, 1864: 436. Type locality: “E provintia Valdivia?” Type series: see Smith (2008) for details. *Pristerophora flavipennis* (Philippi); Dalla Torre, 1913: 331. *Pusiodactylus flavipennis* (Philippi); Smith, 2008: 18.

**Diagnosis.** Length 4.5–5.0 mm. Head and pronotum black, elytra dark tan with black apex. Dorsal surface sparsely to moderately setose; setae thin, erect, white. *Scutellum*: width 1/3<sup>rd</sup> that of total body width. Legs: metatarsomere 1 twice as long as metatarsomere 2.

**Distribution by province** (specific datapoints in Fig. 153). Chile: IX Región de la Araucanía, XIV Región de Los Ríos, X Región de Los Lagos.

***Pusiodactylus mondacai* Smith, 2008**

Figs. 142–143, 153.

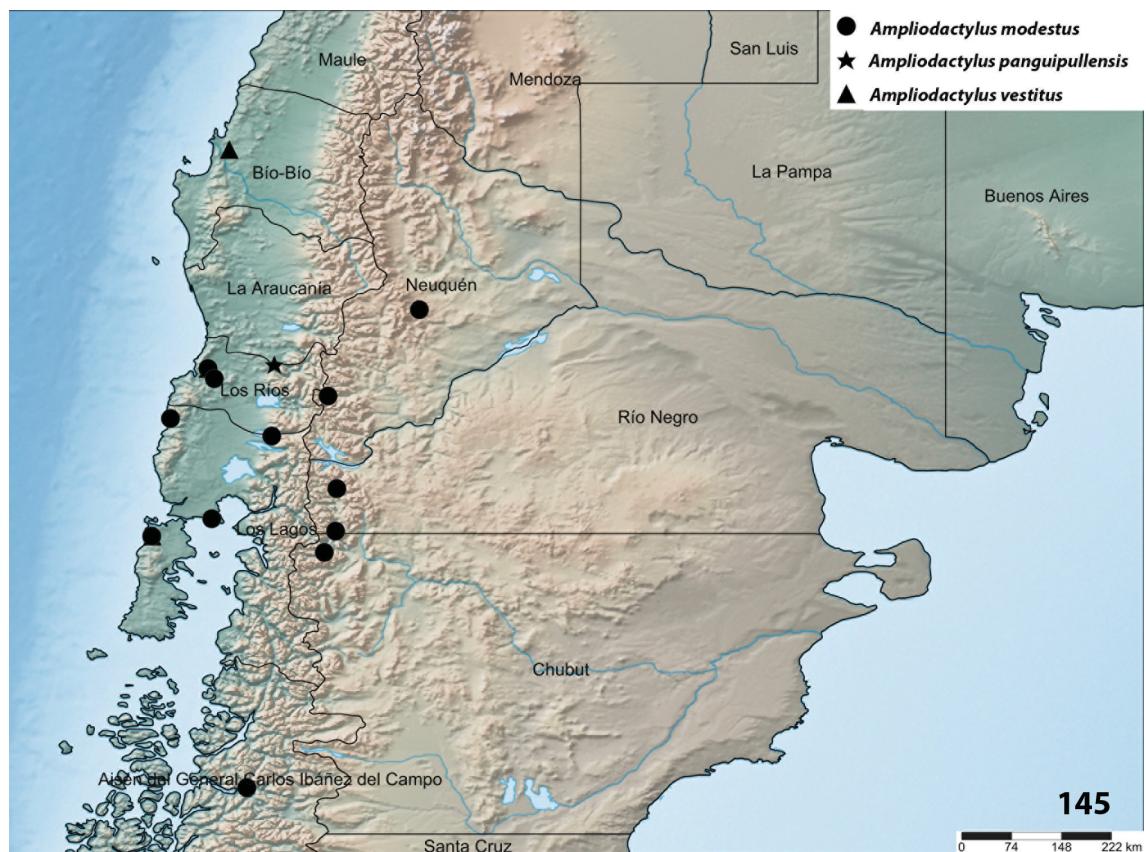
*Pusiodactylus mondacai* Smith, 2008: 19. Type locality: “Chile: IX Región de la Araucanía: Parque Nacional Villarrica: Puelo: 39°31'59.6" S, 71°33'19.6" W.” Type series: see Smith (2008) for details.

**Diagnosis.** Length 5.0–8.0 mm. Dorsal color tan with black areas on elytra at base, laterally near base, adjacent to apex, along suture. Dorsal surface sparsely to moderately setose; setae thick, recumbent, white. *Scutellum*: width 1/6<sup>th</sup> that of total body width. Legs: metatarsomere 1 slightly longer than metatarsomere 2.

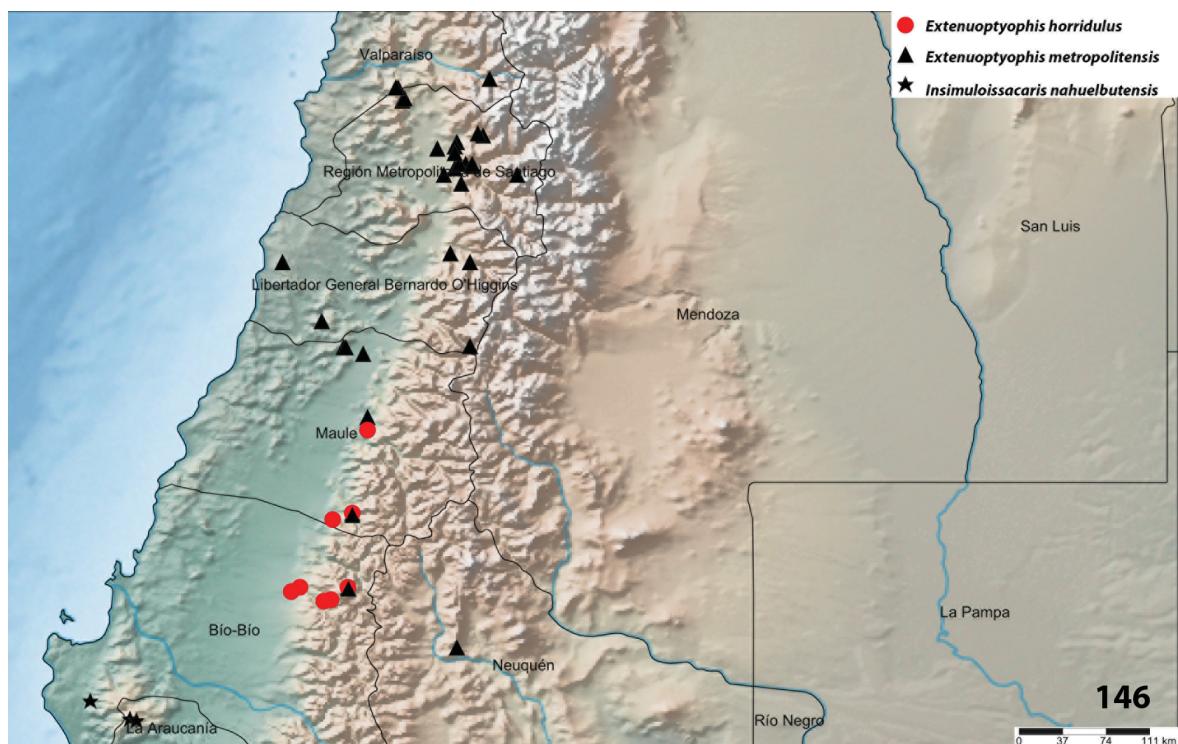
**Distribution by province** (specific datapoints in Fig. 153). Chile: VII Región del Maule, VIII Región del Biobío, IX Región de la Araucanía.



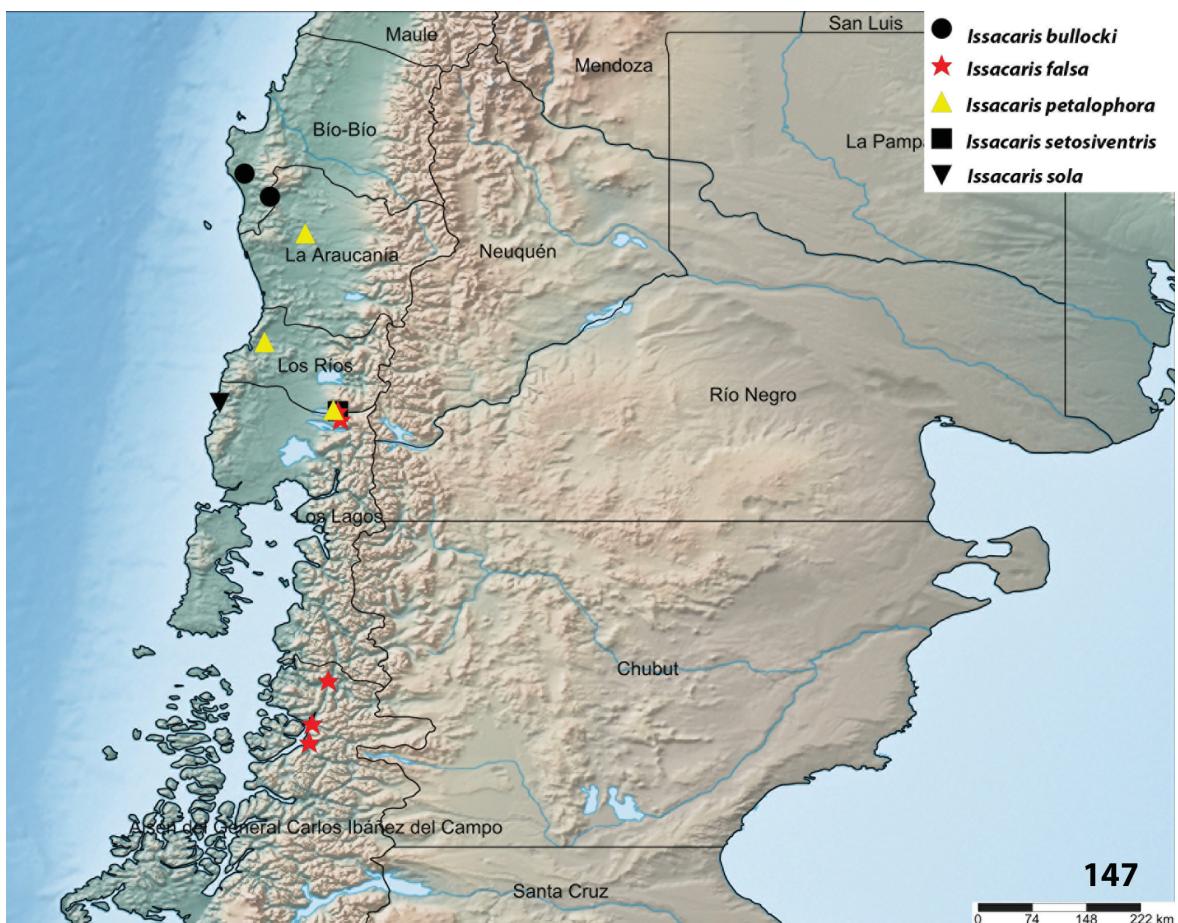
**FIGURE 144.** Distributional records in Chile and Argentina for *Ampliodactylus elguetai*, *A. guinezi*, *A. inusitus*, and *A. marmoratus*.



**FIGURE 145.** Distributional records in Chile and Argentina for *Ampliodactylus modestus*, *A. panguipullensis*, and *A. vestitus*.



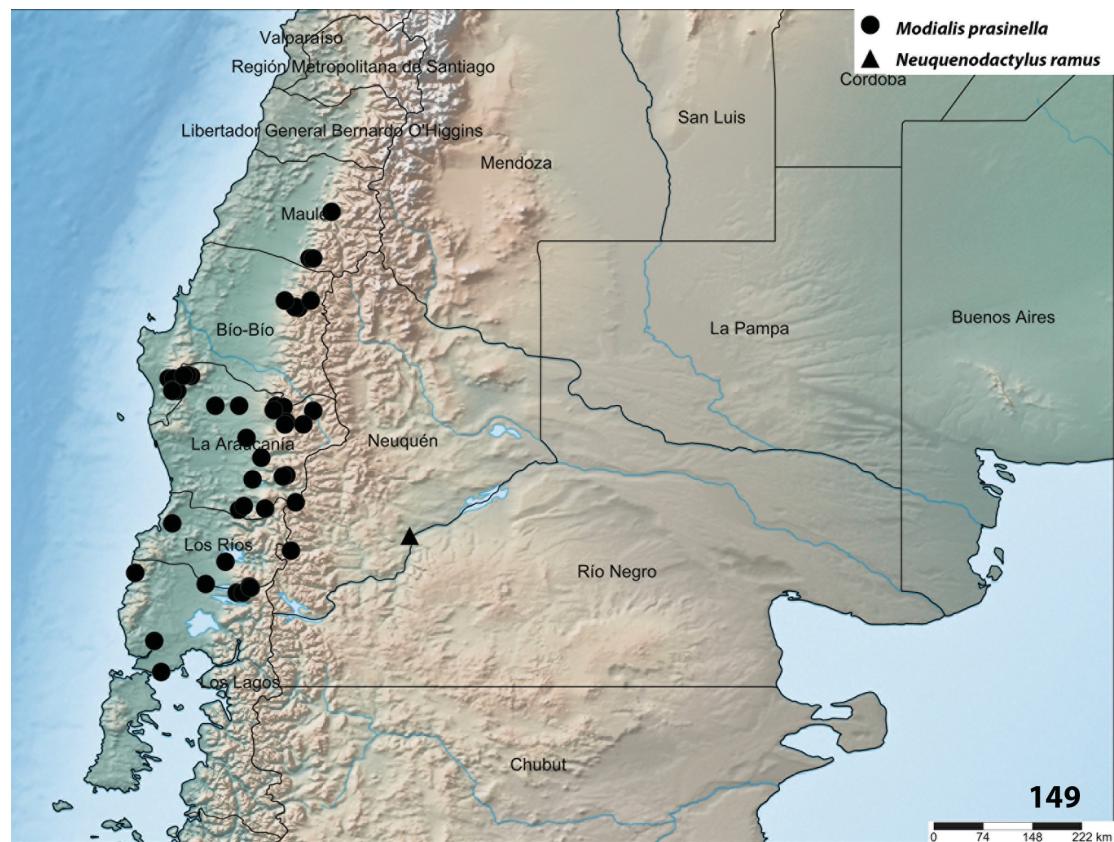
**FIGURE 146.** Distributional records in Chile and Argentina for *Extenuptyophis horridulus*, *E. metropolitensis*, and *Insimuloissacaris nahuelbutensis*.



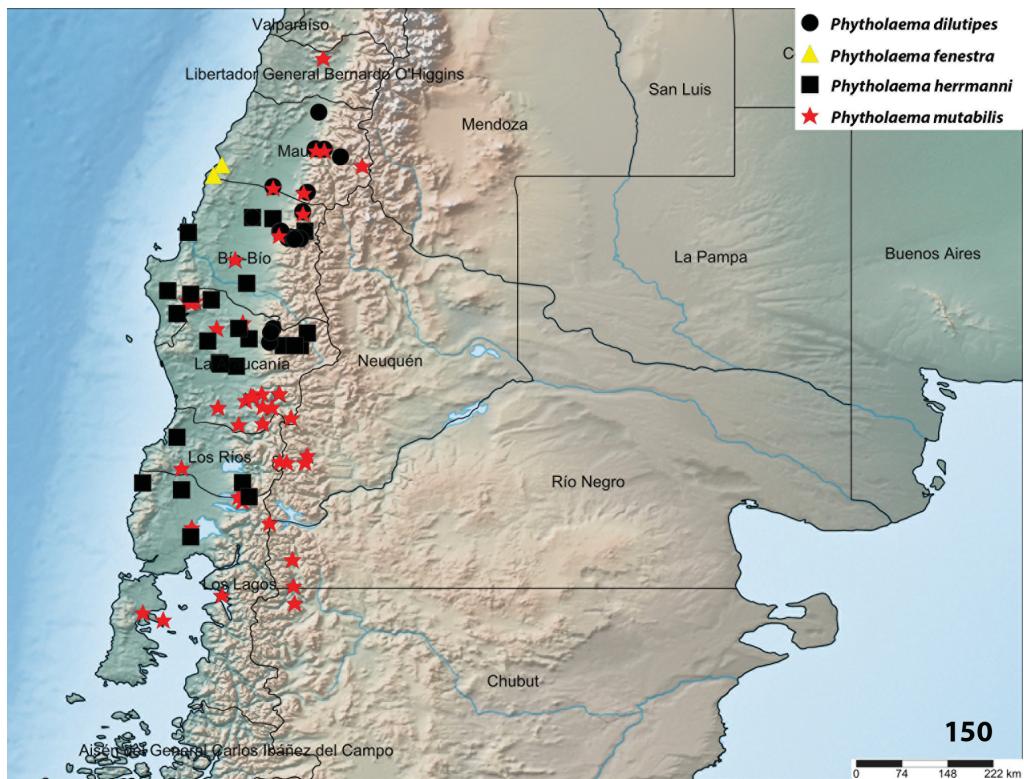
**FIGURE 147.** Distributional records in Chile for *Issacaris bullocki*, *I. falsa*, *I. petalophora*, *I. setosiventris*, and *I. sola*.



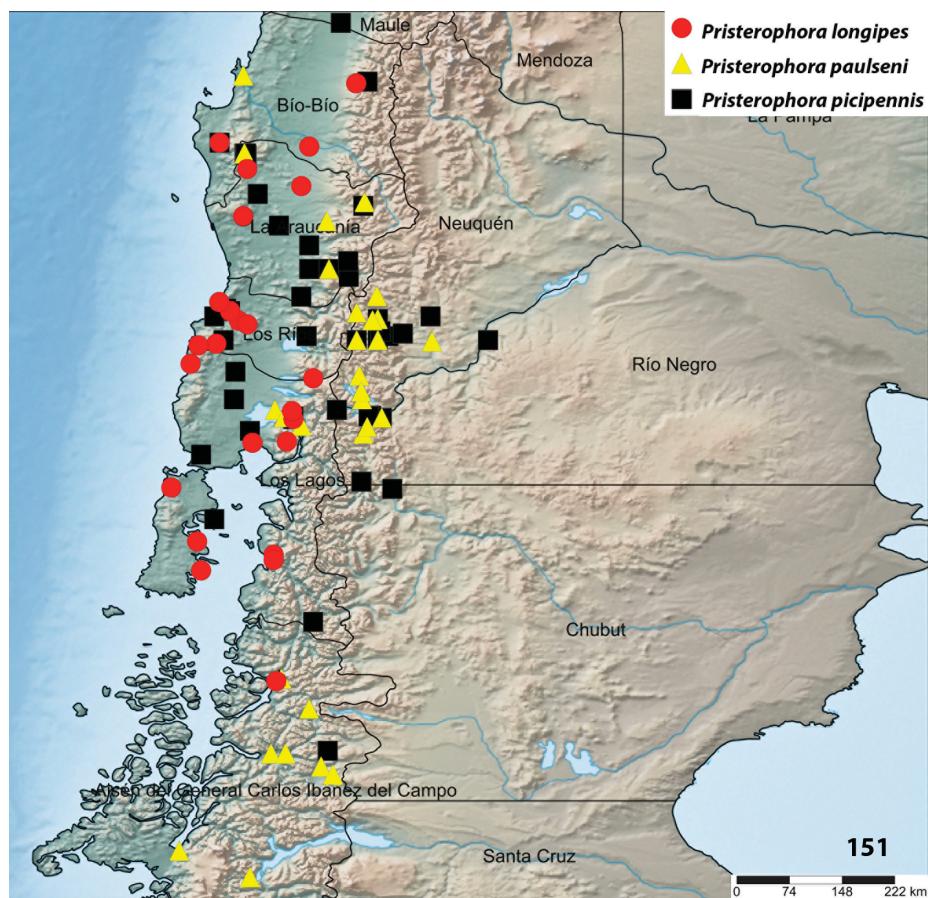
**FIGURE 148.** Distributional records in Chile and Argentina for *Macroductylus chilensis* and *M. farinosus*.



**FIGURE 149.** Distributional records in Chile and Argentina for *Modialis prasinella* and *Neuquenodactylus ramus*.



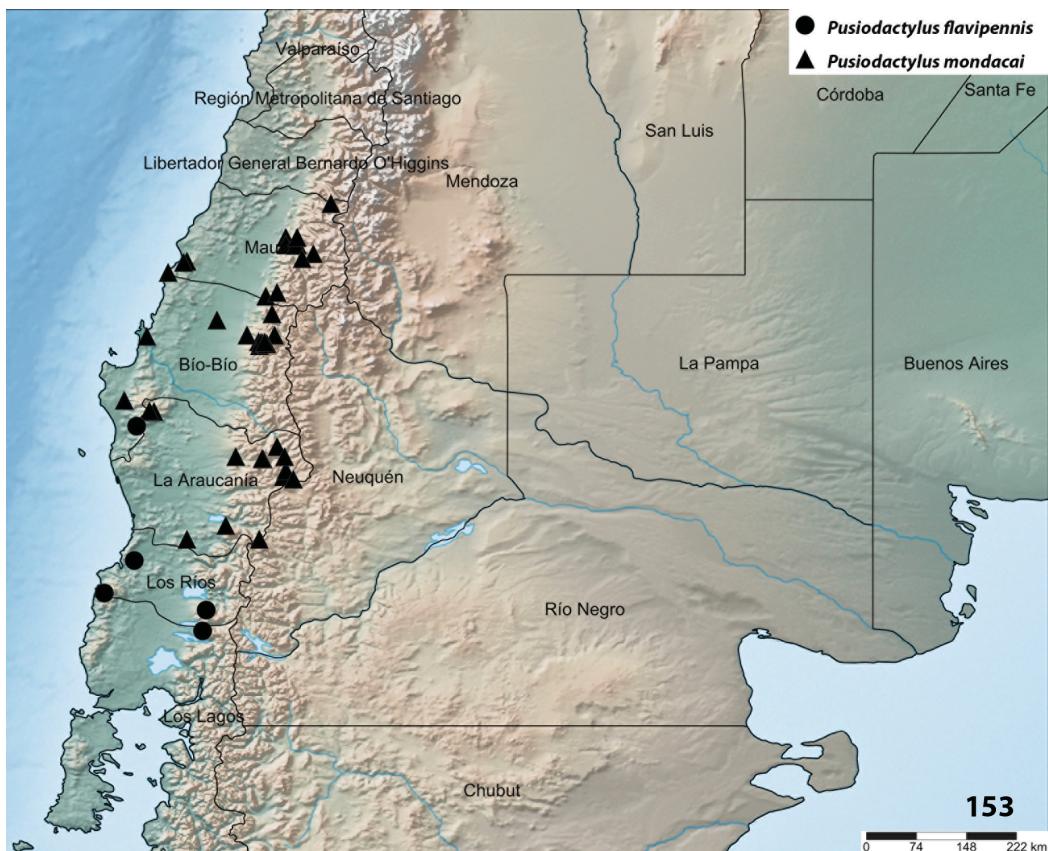
**FIGURE 150.** Distributional records in Chile and Argentina for *Phytholaema dilutipes*, *P. fenestra*, *P. herrmanni*, and *P. mutabilis*.



**FIGURE 151.** Distributional records in Chile and Argentina for *Pristerophora longipes*, *P. paulseni*, and *P. picipennis*.



**FIGURE 152.** Distributional records in Chile and Argentina for *Pseudodicrania aeneobrunnea*, *Ptyophis eiderae*, and *Ptyophis paulseni*.



**FIGURE 153.** Distributional records in Chile and Argentina for *Pusiodactylus flavipennis* and *P. mondacai*.

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